



INDIAN NOTES AND MONOGRAPHS

EDITED BY F. W. HODGE

No.



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A SERIES OF PUBLICA-
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AMERICAN ABORIGINES

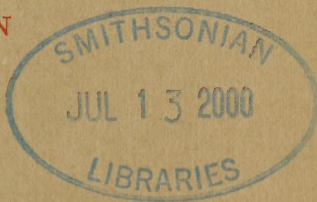
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FIFTH EDITION

NEW YORK

MUSEUM OF THE AMERICAN INDIAN
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SEPTEMBER, 1925



THIS series of INDIAN NOTES AND MONOGRAPHS is devoted primarily to the publication of the result of studies by members of the staff of the Museum of the American Indian, Heye Foundation, and is uniform with HISPANIC NOTES AND MONOGRAPHS, published by the Hispanic Society of America, with which organization this Museum is in cordial coöperation.

*Museum of the American Indian,
Heye Foundation,
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- 41. List of Publications of the Museum of the American Indian, Heye Foundation. Fifth Edition. September, (1925.) *Free.*

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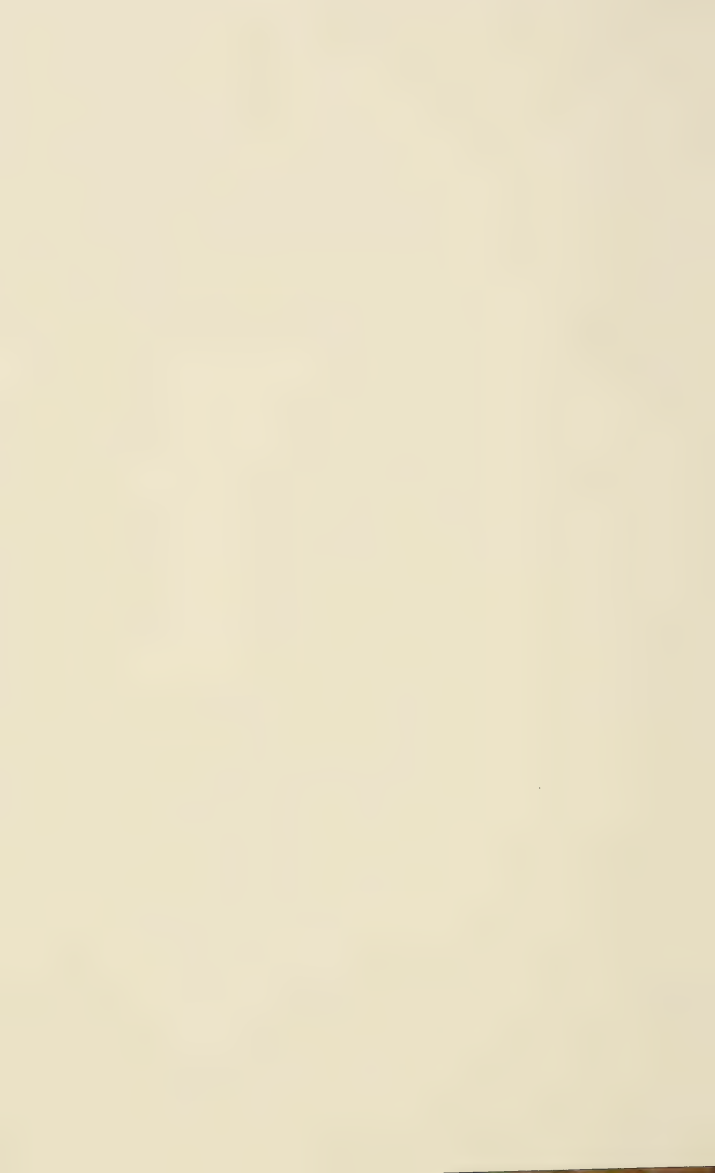
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BY

FRANK G. SPECK

NEW YORK
MUSEUM OF THE AMERICAN INDIAN
HEYE FOUNDATION

1928

THIS series of INDIAN NOTES AND MONOGRAPHS is devoted to the publication of the results of studies by members of the staff and by collaborators of the Museum of the American Indian, Heye Foundation, and is uniform with HISPANIC NOTES AND MONOGRAPHS, published by the Hispanic Society of America, with which organization this Museum is in cordial coöperation.

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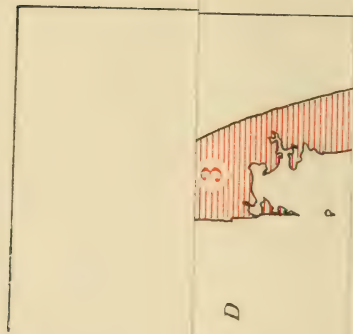
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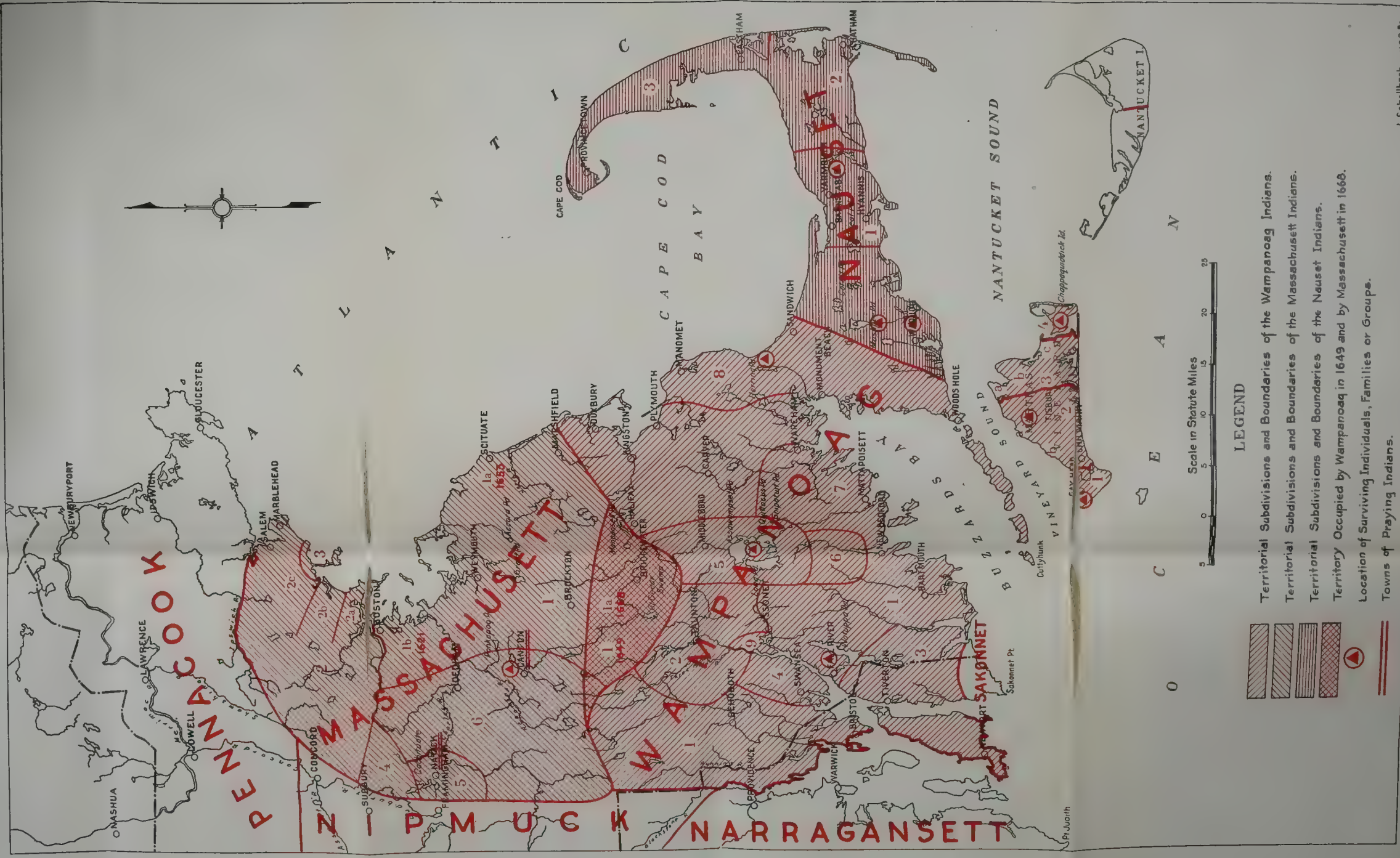
ETT, AND NAUSET INDIANS

TERRITORIAL SUBDIVISIONS AND BOUNDARIES OF THE WAMPA- NOAG, MASSACHUSETT, AND NAUSET INDIANS

BY FRANK G. SPECK

INTRODUCTION

THAT the colonial annals of New England are replete with information concerning the tribes of the region is well known to most ethnologists. Yet few have so far made an attempt to use the available sources for purposes of ethnological reconstruction, in spite of the fact that the southern New England Algonkians constituted a group of particular importance when we come to consider the now pressing problems of culture-trait distribution, localized culture developments, and in particular that engrossing one of the time and extent of the Algonkian eastward migration. The extent of the knowledge possessed by our colonial forefathers may be imagined when it is recalled that they were in more or less close touch with the Indians about them for fully two hundred years, during which time they engaged in the varied pursuits of fighting, Christianizing, defrauding, and civilizing the proud and independent tribes whose recognizable descendants as a result now number fewer than a thousand in



- LEGEND**
- Territorial Subdivisions and Boundaries of the Wampanoag Indians.
 - Territorial Subdivisions and Boundaries of the Massachusett Indians.
 - Territorial Subdivisions and Boundaries of the Nauset Indians.
 - Territory Occupied by Wampanoag in 1649 and by Massachusetts in 1668.
 - Location of Surviving Individuals, Families or Groups.
 - Towns of Praying Indians.

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their own territories.¹ How much of this knowledge preserved in literature can be made to serve the ethnologist's purpose is yet to be determined. So employing one opportunity, out of a desire to put the possibility to a test, I recently scanned the literature pertaining to the Massachusetts and Wampanoag in a search for material bearing on territorial divisions and land proprietorship in the area of eastern Massachusetts. The results are accordingly presented as a small but desirable contribution to our present knowledge of the East.

¹ In 1861, Earle (*Massachusetts Senate Papers*, no. 96) enumerated, after careful surveys, 376 families and 1438 Indians in the state; and including foreigners intermarried or adopted among them, 1610 total. The Wampanoag proper included 306, 67 belonging to Herring Pond, 78 to Fall River, 111 to Dartmouth, 25 to Mamatakesett, 15 to Tumpum Pond, and 10 to Middleboro. On Cape Cod and the islands the related bands the same year showed a census of 403 belonging to Mashpee and 126 to Yarmouth; and on Marthas Vineyard, 253 to Gay Head, 53 to Christiantown, 74 to Chappaquiddick, and 13 to Deep Bottom: being 529 on Cape Cod, and 393 on the islands. At the same time the Massachusetts proper had 117 descendants belonging to Punkapog and 12 to Natick, only 129 for this tribe as compared with a total of 1228 for the Wampanoag. Earle also found 184 Nipmuck descendants in the central counties, 90 belonging to Has-sanamisco near Marlboro, and 94 to the Dudley band. Many of these mixed-bloods were even then dispersed throughout the towns and cities adjacent to their reservations, and they have continued the process since to such an extent that the total number of descendants may have increased considerably but with a corresponding loss of identity and racial distinctiveness.

It would seem hardly necessary to explain that the question of land divisions and ownership is one of great importance in our attempt to solve the Algonkian puzzle. A brief review of some aspects of the general situation may make this statement, as well as our material at hand, somewhat clearer.

The northern and northeastern Algonkians in general, those north and east of the Great Lakes and down the Atlantic coast as far as New Hampshire being only loosely organized, are engaged almost exclusively in hunting, trapping, and fishing. Their notions of land proprietorship are those to be expected among peoples living under conditions of a limited nomadism. Their interests are centered in the wild-animal field, and their occupancy, in consequence, is extended over a very wide territory: a very wide one indeed for a sparse and mobile population. With this as a point of departure, our knowledge of land regulations and hunting-territory rights in the north is now extensive enough to provide a working basis for the pursuit of traces of similar institutions under variant economic conditions elsewhere.

The tribes of the same general culture type, however, which occupied the fertile and populous regions south of New Hampshire, had other interests in the land besides those of the chase. Agriculture here added much to the resources of their country and made them to a greater extent village-dwellers attached more definitely to a settled life. It made

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them, too, more jealous of encroachment by strangers and resulted in a certain development of offensive as well as of defensive warfare, dependent on the intensity of their ideas of nationality centering within the tribe. These factors would account for the greater independence and assertiveness characterizing the tribes of the fertile zones, for their greater unity under recognized chiefs, and for their military resistance to the advance of the covetous Puritans, culminating in the Pequot, King Philip's, and the eastern wars which racked the New England colonies to their foundations. It becomes easier to understand the depth of this Indian patriotic sentiment when we realize that just before the outbreak of King Philip's war (1673) the English inhabitants of New England numbered 120,000, of whom 16,000 were able to bear arms, while the Wampanoag, daring to contend against them, probably numbered about 2,000.¹ Resistance like that offered by the Pequot, Narragansett, and Wampanoag could not, indeed, have been maintained under any circumstances by the Indian populations of the lower St. Lawrence watershed. It seems doubtful if it would ever have been conceived. Harassed by famine and climatic rigors, and few in number, the latter have evinced throughout their history a disposition toward passiveness, if not timidity, which is quite inconsistent with the

¹ S. G. Drake, I, 21, quoting Holmes, *American Annals*, I, 416.

general impression gained by looking over the records of central and eastern Algonkian behavior. We may now, I believe, safely propose some conclusions relative to the territorial institutions of the southern New England tribes. A sentimental attachment to their habitat, sedentary occupations among which regular agricultural and stationary fishing industries play a part more vital than hunting and trapping, a more emphatic responsibility toward government under hereditary chieftains, and a disposition toward warfare proportioned to density of population, are those characteristics which at present seem to me deducible from the survey undertaken. In illustrating the latter statement it need only be mentioned that the Montagnais, who typify the northern culture, number not much more than 3000 souls in the whole southern Labrador peninsula, ranging as hunters formed in family groups over that stretch of country about 1000 miles east and west, and 500 miles north and south. They have never had a national existence, never a tribal chief nor organization, seldom even local chiefs, and never conducted organized resistance to the whites, no matter what may have been their provocation. How this contrasts with the well-known history and character of their southern New England relatives need not be further dwelt on. Again we observe that, in the north, the family units may include from 5 to 20 persons whose inherited hunting territories may average from

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1000 to 10,000 square miles, while in eastern Massachusetts we define groups of families forming local units or bands under hereditary chiefs numbering, as we are in one case informed, 60 fighting men, or at least 250 souls, all belonging to one locality not exceeding 100 square miles in extent. On the whole the Massachusett and Wampanoag were fairly populous tribes, the territory of each having been approximately 800 square miles. The Massachusett, although much reduced by war and disease at the time of English settlement, are estimated to have held this territory with a population exceeding 3000.¹ They have even been estimated as high as 3000 men, though Mooney² regarded this as excessive. In 1631 the group numbered only 500, and in John Eliot's time (1650), Natick, a Massachusett "praying town" of importance, had about 150 souls, while Punkapog, the other Massachusetts praying town, had only 60 in 1674. As a result I believe it might be well to allow not more than 2000 for the original maximum at the time of English contact.

The Wampanoag probably had 2000. The best evidence for this estimate is that based on Captain Church's statement that about 1300 of King Philip's people were either killed or captured. Hubbard thought that 700 of the Wampanoag were

¹ Hubbard (see reference on page 16), 238.

² Handbook of American Indians, *Bull. 30 Bur. Amer. Ethn.*, pt. 1, 816.

killed or taken and 300 surrendered.¹ A remainder of 700 would therefore seem to be an ample estimate. King Philip is thought to have had about 500 warriors of his own tribe, again accepted by Mooney as a basis for enumeration.² Estimating for the two tribes respectively, the population average would be from two-fifths to one-third of a square mile to the individual in each group. I would suggest comparing this estimate with previously published ones by Davidson and myself for the territorial occupancy of the Wabanaki tribes and those of the Labrador peninsula.³

There is significance here underlying the correlation of population density, the development of agriculture as a food supply replacing the chase, the centralized type of government and the feudal order of society. If, as Sollas⁴ thinks, 300 hunting people

¹ Hubbard (243) thought that Philip had about 300 men of his own and 300 belonging to Weetamoe.

² Loc. cit., pt. 2, 903.

³ D. S. Davidson, Family Hunting Territories of the Waswanipi Indians of Quebec, *Indian Notes*, vol. v, no. 1, 1928, pp. 47-48; Notes on Tête de Boule Ethnology, *Amer. Anthr.*, vol. 30, no. 1, 1928; F. G. Speck, The Family Band as the Basis of Algonkian Social Organization, *Amer. Anthr.*, vol. 17, no. 2, 1925, pp. 303-04; Beothuk and Micmac, *Indian Notes and Monographs*, misc. no. 22, 1922, pp. 109, 136-37; Mistassini Hunting Territories in the Labrador Peninsula, *Amer. Anthr.*, vol. 25, no. 4, 1923, p. 461; Family Hunting Territories of the Lake St. John Montagnais, *Anthropos*, Bd. xxii, 1927.

⁴ W. J. Sollas, *Ancient Hunters and their Modern Representatives*, London, ed. 1915, pp. 55-56.

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in a fertile region require more than 100 square miles, then population was at its maximum in eastern Massachusetts—for a hunting people here supported in a large degree by maize-growing. The treatment of data from the area of northeastern America newly reported is about ready for the attention of students dealing with the ethnological aspects of population as did Carr-Saunders in 1922 and Pearl in 1925.¹

Our scrutiny of the records furthermore discloses other interesting facts which fall in line with those recorded at large among the northern tribes, namely, the localization of territories, resentment against trespass, the hereditary descent of proprietorship in the male line, the theoretical ownership of game in the district, the incidental feature of temporary stations and subdivisions in the territories, and, finally, the prevalence of geographical territory names.

The survey has yielded another result, as will be seen. By tracing the boundaries of the local proprietors it has become possible through knowing their tribal allegiances, admitting a few exceptions, to fix the tribal boundaries for at least three more groups—the Narragansett, Wampanoag, and Massachusetts—to within an allowance of from 5 to 10 miles. I make bold to propose that a similar

¹ A. M. Carr-Saunders, *The Population Problem*, Oxford, 1922, chaps. vii, ix; Raymond Pearl, *Biology of Population Growth*, N. Y., 1925; also J. S. Sweeney, *Natural Increase of Mankind*, Baltimore, 1928.

research pursued in central and northern Massachusetts and New Hampshire may do as much for the boundary complications of the people known to us as Nipmuck, and likewise for those included under the Pennacook confederacy. Joining this advance with that being made in the division limits of the Wabanaki tribes of Maine on the east and the recently established Mohegan-Pequot boundaries in Connecticut,¹ we shall be in a position to supply the much needed determination of tribal geography in the *terra incognita* of the New England coast.

Before proceeding to the actual material I will add that the sources consulted on boundary questions have been diffuse and unsystematically published. Of great value have been the several works, now a century old, of that indefatigable historian S. G. Drake, whose pages supply numerous references to the colonial records containing information desired. They will be referred to in the notes. Other sources are:

I. Thomas Church, *History of King Philip's War, 1675-76*, with notes and an appendix by S. G. Drake (2d edition), Exeter, N. H., 1834. He quotes, among others, Hutchinson, *History of Massachusetts*, Salem, 1795; W. Hubbard, *Narrative of Indian Wars*, Brattleboro, 1814; S. Penhallow,

¹ Evidence on the tribal confines of this group I have brought together in a contribution entitled *Native Tribes and Dialects of Connecticut*, 43d *Ann. Rep. Bur. Amer. Ethn.*, 1928 (in press).

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Wars of New England, Boston, 1726; and the *Historical Collections* of the Massachusetts Historical Society and the New Hampshire Historical Society from 1794 and 1824 respectively.

II. S. G. Drake, *Biography and History of the Indians of North America*, Boston, 1837.

William Hubbard's record of the events of King Philip's War gives us another version of the actions of the times from a somewhat different but also contemporaneous point of view. I have referred frequently to *A Narrative of the Indian Wars in New England*, Stockbridge, 1803.

Another source of value may be mentioned, viz., E. W. Pierce, *Indian History, Biography and Genealogy*, North Abington, Mass., 1878. A casual treatment of Wampanoag history from secondary sources is that of H. E. Chase, *Notes on the Wampanoag*, *Smithsonian Misc. Coll.*, 1883, no. 69, pp. 878-907.

THE FEUDAL RÉGIME

A group of associated phenomena confront us which can hardly be regarded, as I can conceive it, in any other sense than that *they form a part of the ubiquitous old Algonkian institution of male-hereditary land proprietorship*, which pivots around the hunting industry in the far north and prevailed formerly among tribes having the combined agricultural and hunting industries to the southward. Here we see

the family units enlarged into communal groups. In the general prospect they seem like stages in the progressing series of developments from the primitive biological family, in its appropriated, or better perhaps preëmpted, tract, growing under advancing complexity into the small feudal tribe under hereditary family sachems or chiefs.

That the Algonkian peoples of southern New England were subject to their hereditary chiefs to

a degree unknown among their hunter kinsmen of the far north is shown by numerous allusions. In the case at hand we can see how the local chiefs held the prerogative of disposing of the lands belonging to the band, how they received in person



FIG. 1.—Mrs. Zerviah G. Mitchell, descendant of Massasoit in the ninth generation. Died 1895, at ninety years of age, at Betty's Neck, near Middleboro, Mass.

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the payment therefor. They also had the liberty of independent allegiance, for, as we see, the local ruler, whether man or woman, in several instances sided with the English against his own tribe in the colonial contests. This independent action of local sachems is strikingly illustrated in events connected with the history of both tribes considered. The power vested in the chiefs or sachems, moreover, is emphatically illustrated by the tribute, even personal service, which was expected of their followers. In practically all the tribes of southern New England the sachems were supported economically by their people. A concrete instance of this interesting sovereignty is met with in the statement of Kutshamakin, a Massachusetts sachem (page 103). When the missionary Eliot desired to know why the sachem was opposed to his people becoming Christians, he said then they would pay him no tribute.¹ Then most explicitly one of the Christian converts told Eliot that the sachem had no reason to complain, because for the past two years they had given him as tribute 26 bushels of corn at one time and 6 at another; that in two days' hunting they had given him 15 deer, broke up for him 2 acres of land, and made him a great wigwam, 20 rods of fence with a ditch, and paid a debt for him of £3, 10s. One of the men, moreover, had given him as an individual a beaver-skin of two

¹ Drake, *op. cit.*, II, II, 52.



FIG. 2.—Mrs. Emma Safford, daughter of Mrs. Zerviah Gould Mitchell, age eighty years (1928). (Photo. by Kapsinel, Gloucester, Mass.)



FIG. 3.—Chief Leroy C. Perry, Wampanoag of the Fall River Band (1924).



FIG. 4.—Leroy C. Perry (in costume), Wampanoag, elected chief of the Wampanoag group by the Indian council of New England, 1923.

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pounds, besides many days of work in planting corn.¹ But the sachem treated this declaration with indignation. We learn that the sachems were absolute masters of their people, their services and fortunes being subject to command. On the whole this

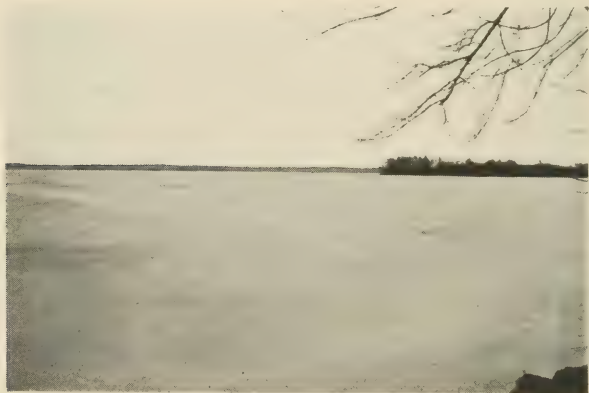


FIG. 5.—Lake Assawampsett, looking eastward across ice (January, 1920).

feudal feature is distinctly a southern, not a northern one. The Algonkians of the middle regions and the central states show it to an extent not generally understood. But here in New England the social superiority and economic status of the several grades of chiefs seem to indicate a thoroughly feudal type of

¹ Drake, *op. cit.*, 114–115.

society. Nothing like it is found among the scattered and semi-nomadic hunters of the loosely organized Algonkians of the far north. Yet the centralization of power toward the south, as we observe the tribes within the Maryland and Virginia area, becomes more and more striking. There is evidently a metabolism in social development here in relation again to economic complexity and population.



FIG. 6.—Assawampsett lake, south shore, looking toward Betty's Neck.

Without endeavoring to treat at this time the subject of the native class system in detail, some material from early authors is given to show the prospects of the topic for extended investigation, and also on account of the bearing it has on the local land-tenure regulations.¹ The most explicit

¹ An interpretation of the forces behind the development of the caste system has recently been published, with a review of the facts recorded among the Indians of southern New England, by Wm. Christie MacLeod, *Origin of the State*, Phila., 1924, pp. 19, 48.

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account we have for the immediate area with which we are concerned is that of Mayhew (about 1640-50), applying to the tribe on Marthas Vineyard.

The statement of Mayhew has much of interest and importance, therefore it is given in full as published by Banks.¹



FIG. 7.—King Philip's Lookout, overlooking Lake Assawampsett (1920).

Their Government was purely Monarchical; and as for such whose dominions extended further than would well admit one Prince's personal guidance, it was committed into the hands of Lieutenants, who Governed with no less absoluteness, than the Prince himself; notwithstanding, in matters of difficulty, the Prince Consulted with his Nobles, and such whom he esteemed for wisdom; in which it was admirable to see the Majestick deportment of the Prince, his speech to his Council, with the most deliberate

¹ Matthew Mayhew, *Triumphs and Conquests of Grace*, pp. 13-17, quoted by Chas. L. Banks, *History of Martha's Vineyard*, I, 38-39, Boston, 1911.

discussion of any matter proposed for their advice, after which, what was by him resolved, without the least hesitation was applauded, and with at least a seeming Alacrity attended.

The Crown (if I may so term it) always descended to the Eldest Son (though subject to usurpation), not to the female, unless in defect of a Male of the blood; the Blood Royal, being in such veneration among the People, that if



FIG. 8.—Shore of Quittacus lake, looking north.

a Prince had issue by divers wives, such Succeeded as Heirs who was royally descended by the mother, although the Youngest, esteeming his issue by a Venter of less Quality than a Princess, not otherwise than Sachems or Noblemen.

Their Nobles were either such who descended from the Blood Royal, or such on whom the Prince bestowed part of his Dominions with the Royalties, or such whose descent

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FIG. 9.—The neck between Little Quittacus and Great Quittacus ponds, in which neighborhood Captain Church escaped being ambushed in 1676.

was from Ancestors who had time out of mind been so Esteemed as such.

Their Yeomen were such who having no stamp of Gentility were yet esteemed as having a natural right of living within their Princes Dominions, and a common use of the Land; and were distinguished by two names or Titles, the one signifying Subjection, the other Titles of the Land.

Although the People retained nothing of Record nor use of Letters, yet there lived among them many families, who, although the time of their Forefathers first inhabiting among them was beyond the Memory of man, yet were known to be Strangers or Foreigners, who were not privileged with Common Rights, but in some measure Subject to the Yeomanry, but were not dignified, in attending the Prince, in Hunting or like Exercise, unless called by particular favor.

The Princes, as they had not other Revenue than the

Presents of their subjects (which yet was counted Due debt), Wrecks of the sea, the Skins of Beasts killed in their Dominions, and many like things, as First Fruits, etc., so they wanted none; for in case of War, both People and Estate was wholly at their dispose, therefore none demanded nor expected Pay. In respect to their Court, it was doubtless maintained in great Magnificance in distinction from the Subject which is the utmost can be obtained by the greatest monarch, their families and attendants being well cloathed with Skins of Moos, Bear, Deer, Beaver, and the like, the Provisions for their Table, as Flesh, Fish, Roots, Fruits, Berries, Corn, Beanes, in great abundance and variety was always brought by their Neighboring subjects; all of which they were as void of Care as the most Potent Princes in the Universe.

As the Prince was acknowledged Absolute Lord of the Land, so he had no less Sovereignty at Sea, for as all belonged to him, which was stranded on the shore of the Sea Coast, so whatever Whales or other wreck of value, or floating on the sea, taken up on the seas washing his shores, or brought and Landed, from any part of the Sea, was no less his own.



FIG. 10.—Long pond from the eastern shore.

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The class divisions of medieval European society could scarcely be better outlined in the same number of words than as we see them described here. It is, indeed, difficult to vision them as applying to the society of an Indian tribe on the Atlantic coast. Yet the evidence confronts us as a piece of positive testimony to the existence of a class



FIG. 11.—Snake creek connecting Lake Assawampsett with Long pond. Here an ambush was laid for Captain Church.

subdivision in southern New England. A classification of chiefs into several grades is also pointed out for the Narragansett in 1643 by Roger Williams, who designates the supreme rulers as sachems and the others as lords and under-sachems, to whom they carried "presents and upon any injury received and complaint made, their protectors will revenge it."¹

¹ Roger Williams, *Key into the Language of America* (1643), *Rhode Island Historical Society Collections*, 120-122, 1827.

Willoughby¹ has brought together from 17th century sources (Mather, Wood, Williams, Morton, Gookin) the essential references to the three-class system in eastern Massachusetts. There were sachems or the "royalty," as they were unanimously



FIG. 12.—Snake creek between Long pond and Lake Assawampsett, where Captain Church was ambushed.

designated by contemporary writers, the "common people" who represented the mass of the community and who "possessed rights to the tribal lands." Outsiders who had joined the tribe had no legal rights nor ownership in the land, being attached to the landed families. Subjugation to the will and

¹ In A. B. Hart, *Commonwealth History of Massachusetts*, I, chap. VI, 131-132.

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FIG. 13.—Eastward view of neck separating Great Quittacus from Poksha pond. (*Photo. by A. I. Hallowell.*)

authority of the class above was the rule in the case of all.

One other matter it would be very desirable to elucidate. This is the character of land tenure within the band. In the various subdivisions that we have determined, the land may have been held in common by all the families forming it. Yet there seems to have been some permanency of location of families and power of disposal vested in individuals of both sexes. The deeds of transfer to the English in such cases generally bore the signatures of the individual making the sale and others of his connection, but especially the mark of consent of the sachem to whose band they belonged. This array of testimony is met with throughout the New England records and seems to give an idea of the typical procedure in transferring land. Summarizing on this uncertain point one

might be tempted to imagine that the status of land within the band was something like the following: The band, being a group of more or less related individuals, controlled a rather definite tract of country as its own. A chief or sachem, whose office was hereditary in the male line within some leading family, was recognized as its head. Certain political, social, and economic distinctions went with the office. To dispose of any part of the common tract by a family who had resided in and developed its resources required the consent of the chief as well as of the individuals occupying it. In short, the band-holding in control of the hereditary overlord continued in such division among families which occupied and utilized for agriculture and hunting the same holdings, handing the privilege down to male



FIG. 14.—Sampson's or Sassamon's cove, looking eastward, in winter with ice on the lake. This cove, on the north shore of Lake Assawampsett, was where Sassamon was killed and disposed of, furnishing an immediate incentive for the outbreak of King Philip's war.

descendants, or to females if there were no male offspring, until the tracts had come to be regarded as their personal property.

TRIBAL BOUNDARIES

The information available in our sources permits an inference to be made as to the boundaries of the Massachusetts and Wampanoag: marking an advance of some decided value in the gradual process of ethnological reconstruction in the East. The results are shown on the chart (pl. 1).

The two ethnic groups seem to have constituted political rather than linguistic or economic units, their differentiation depending more on allegiance to certain distinct hereditary chiefs whose policies seem to have been actuated on different principles of peace and war and of land negotiation. It may be added that the political unit was more or less the determining factor throughout southern New England in general, inasmuch as it is difficult, almost impossible, to specify bands of the adjacent groups of Nipmuck, Pennacook, Narragansett, Massachusetts, Wampanoag, and Nauset, except as being subject to this or that group of chiefs or as holding a certain political attitude toward the colonial governments. Affiliation, however, was of considerable importance in the local case, because tribal recognition generally meant life or death to those concerned after the campaigns of destruction waged in turn against the Pequot, Narragansett,

Nipmuck, and Wampanoag. The contemporary groups, however, were evidently of a rather fixed character even before the arrival of the English, since we hear of intertribal broils based on territorial claims and to avenge encroachments, affronts, manslaughter, and similar causes.



FIG. 15.—Sampson's or Sassamon's cove, looking northward, in summer.

In the case of the Wampanoag our endeavor to define boundaries is made simple by the natural water boundaries of their habitat and by the records of dispute between them and their western neighbors, the Narragansett, over islands in Narragansett bay.

The boundary between the Wampanoag and the Narragansett was a matter of some continued dispute between the parties concerned, according

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to statements of Drake and Roger Williams. In 1632 a brief war occurred between Massasoit and Canonicus of the Narragansett. Under pressure of the English this contest was soon ended, but as a result Massasoit changed his name to Ousamequin. Roger Williams fled to Rhode Island in 1635 to avoid being seized and was sent to England for being a Quaker. He patched up a friendship



FIG. 16.—Dense white-cedar swamp at Betty's Neck. (In such retreats the Wampanoag had their hiding places.)

between the two tribes; induced Massasoit to give up the land in dispute, namely Rhode Island, Prudence Island, and some others besides Providence. It appears that Miantonomo had gained possession of some of Ousamequin's dominions, for in 1643 the latter was aided by Plymouth colony

in respect to encroachments by the Narragansett.¹ It is recorded also by Roger Williams that in 1656 Ousamequin was at feud with Pumham, a Narragansett, about the title and lordship of Warwick, Rhode Island.

That the Wampanoag jurisdiction extended to Pawtucket river is fairly assertable from the fact that Massasoit and his sons, by heredity, laid claim to and sold at various times the land reaching to its banks. Southward following Narragansett bay, his headquarters at Mount Hope neck and his enmity toward the often mentioned Narragansett chief, Pumham, who possessed Warwick and environs in Rhode Island, give us a further definite line. Pocasset, which lay on the eastern mainland of the same bay, is definitely known to have been owned by Weetamoe, a woman chief, and kinswoman of the Massasoit family. But when we come to the point of deciding how to trace the Wampanoag boundary line in regard to the large island in the bay known as Rhode Island, we encounter some difficulty because it changed possession several times as the result of combat and exchange between the Wampanoag and the Narragansett. This large island lies only three miles or so off the eastern shore of the bay and was easily accessible from it.

The name of Rhode Island was Aquetneck, and it was first settled by the English in 1638, when its

¹ Drake, *op. cit.*, II, II, 27.



FIG. 17.—Views of Annawon's Rock in the Wampanoag country, about eight miles east of Taunton (Sept. 4, 1922). See footnote on opposite page.

name became Isle of Rhodes. Presumably at that time it was under the domination of the Massasoit band of Wampanoag. In several cases, however, the colonial records inform us of change of authority among its native owners, though first and last its control seems to have been Wampanoag and therefore we mark it as such. Now, with the exception of Saconnet neck, including the present town of Compton, where lived a small but independent band known as Saconnet under the female chief Awashonks, the tribal line is a water boundary and continues eastward to Cape Cod, where at the base of the cape a line of national separation evidently divided the Wampanoag from the Nauset. It is so marked on the chart without, however, documentary proof of its accuracy within a range of five miles. Referring to the Saconnet just mentioned, there is an interesting possibility that this small group may have been of an original separate identity to the extent of being a Narragansett partition. In the war records of the time and region the independence of the Saconnet is emphasized, and Narragansett ties are indicated by social intercourse

* *Note to fig. 17.* Here, on the border of Squonnaconk swamp, which begins a few feet in back of the figure seated in the lower view, was the rockshelter camp and hiding-place of Captain Annawon, where he and some sixty of his band were captured through strategy by Captain Church on the night of August 28, 1676. The scene has not altered much since. The upper view shows the rockshelter about thirty feet above and to the northwest of the lower ledge. Both shelters face southward. (See page 61.)



FIG. 18.—Cynthia Conant (Attaquin), Herring Pond Wampanoag.



FIG. 19.—Russel Gardner, Herring Pond Wampanoag.

referred to in the Church chronicle. We have a similar perplexity in the decision about the Indians of Marthas Vineyard. They have been generally listed as Wampanoag, although they did not submit to the control of the war chief of that nation at the time of its national crisis during King Philip's war.

We have now the Wampanoag bounds fairly covered except on the northern frontier, and here the only possible course is to harmonize the division line between the claims of chiefs whose allegiance is known to be either Wampanoag or Massachusetts.

This course is possible by reference to the land transactions of Tuspaquin, the Wampanoag owner of the Assawampsett Lake region, those of Philip and his brother toward the headwaters of Neponset river, and, on the other hand, the negotiations of the Massachusetts chief Chickataubut and his sons, chiefly Wampetuck, and Wampey (possibly a corruption of the same), which are known and recorded as extending down to Namasket and Titicut rivers. That Ousamequin (Massasoit) sold a district about Bridgewater in 1649 is well known from the original deed, though later the Massachusetts chief gave a deed for part of the same land. The uncertainty and change form the reason for marking the territory in question with two enclosures on the accompanying chart (pl. 1), which shows the habitats of the tribes investigated.

Beginning with the already adjusted Wampanoag-Massachusetts frontier, we trace the tribal confines



FIG. 20.—Lizzie Ellis (Fletcher), Herring Pond Wampanoag.



FIG. 21.—Adrian Cesar, Herring Pond Wampanoag.



FIG. 22.—Mrs. Mary Chappelle, one of the survivors of the Punkapog band of "Praying Indians" of the Massachusett tribe.

of the Massachusett themselves, on the east, beyond and including Boston harbor and its islands north to Lynn and evidently almost to Salem. The reason for lining off the Massachusett boundaries at Salem is the knowledge gathered from Salem and

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Manchester records that Masconomo, whose identity is given as Pennacook, was their proprietor. Accordingly, running a line inland below Masconomo's claim and joining the jurisdiction of the chief and disposer of the region about Concord, whose name was Nahattawants, and he a Nipmuck, we have our Massachusetts boundary approximated in the north. For several reasons the Massachusetts as a political body lack the definite character noted for the Wampanoag. We hear of their suffering at the hands of the Wabanaki on the north, of their coöperation, for defense with the Pennacook, and of intermarriage among their leading families on both the male and the female side with Pennacook and with Nipmuck. Their character in a political and social view seems to have been somewhat intermediate. To mark out their bounds inland on the west we can depend only on the known location of those towns of Praying Indians, founded by John Eliot, which are definitely stated to have been composed of Nipmuck. This is possible to within five or ten miles of approximation, which completes the geographical circuit for the two bodies under discussion.

Using the documents for our ethnological purpose, and the topographic charts of the Geological Survey, accuracy in the boundary determinations is possible to within an allowance of little more than say five miles of the actual limits. This, in view of the lapse of time intervening and the importance of the



FIG. 23.—Mrs. Mary Chappelle, Punkapog descendant.



FIG. 24.—Tamsen Weekes, Gay Head Wampanoag (died about 1890), one of the last speakers of the language.

object sought, is a range of probable error, I feel safe to assert, hardly worth considering. Gookin, in 1674, gave roughly the same territorial bounds of the principal southern New England tribes as those which we arrive at through our reconstructive survey.

WAMPANOAG TERRITORIAL SUBDIVISIONS

At least nine subdivisions under local headmen may be listed for the Wampanoag. These are not all contemporaneous, but represent a time perspective of some fifty years, over which period the hereditary transfer in the male line comes into view. The details of our information pertaining to the territories laid claim to and sold by the different chiefs show that in all probability the majority of the locality groups in this tribe have come to be noted in the records. The reason for this is fairly obvious; for the Wampanoag territory was relatively a small one, the subdivisions were fairly definite in their location, and in the various campaigns against the Indians the Plymouth soldiers under Captain Church hunted down and captured one band after another, as these retreated into their native haunts, and subsequently recorded what they did.¹ Then the band chiefs were well known: the names of

¹ Some aspects of the significance of ethnology in history are brought out in W. C. MacLeod's *The American Indian Frontier*, 1928, chap. xvii.



FIG. 25.—Mrs. Lucina Jeffers, Wampanoag of Gay Head, age 96 (1928).

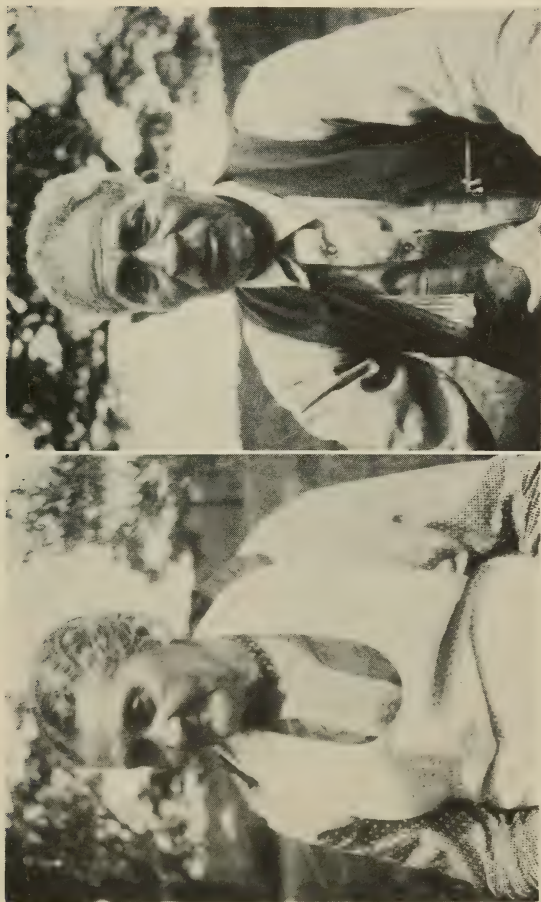


FIG. 26.—Wampanoag types at Gay Head. (Mrs Charles H. Ryan, and Thomas Jeffers, son of Lucinda Jeffers.)



FIG. 27.—Grover Ryan, Wampanoag of Gay Head.

important personages recur frequently in the annals of the times both as fighters and as land sellers, and their haunts at last were remembered by their Indian names in most instances by the settlers and the names perpetuated until the present time. It would seem that for this tribe we have the means of

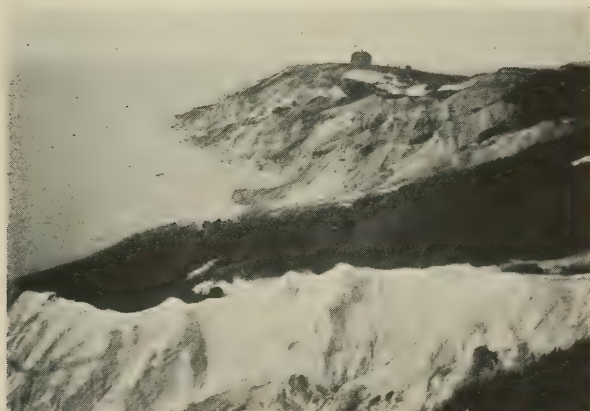


FIG. 28.—The colored cliffs at Gay Head, legendary scene of culture hero's home.

a rather complete reproduction of the habitat divisions and something of the particulars pertaining to the proprietors themselves.

No. 1. The principal family, in which the office of tribal sachem was hereditary in the male line of descent, was that of Massasoit who was sachem or head chief of the Wampanoag at the time of the first



FIG. 29.—The colored cliffs at Gay Head, legendary scene of culture hero's home.

coming of the English. His name is fairly clearly to be translated as "he who is great," equivalent to "the leader." Mention is first made of this man and his dominions by Samoset, the Indian who befriended the settlers on their setting foot at Plymouth. Samoset informed the English that the neighborhood where they were landed was called Patuxet, that the sachem over it was Massasoit, and finally that he had about 60 men under him. Later Massasoit changed his name to Ousamequin, the meaning of which is accepted as "yellow feather."

Massasoit's territory was an extensive tract

bordering on upper Narragansett bay, covering from Bristol around Mount Hope bay almost to Saconnet. It bore the Wampanoag name of Sowwams, and the better known Narragansett name of Pokanoket,¹ neither of which seems satisfactorily interpretable. That the same holding included part of Bridgewater, which bore the Wampanoag toponym of Saughtucket, is inferred from a sale of the district of seven miles square in 1649. Later, in 1653, he and his son Wamsutta, afterward known as Alexander, sold to the English of Plymouth all the land lying southeast of Sinkunke or Rehoboth, "bounded



FIG. 30.—Easkissy (*i'skis'i*) hill in the distance (legendary location), showing character of country.

¹ Drake, op. cit., I, 18; II, II, 19.



FIG. 31.—Celia Law, Mashpee.

by the brook Moskituash westerly and running by a dead swamp eastward to a great river and to a neck called Chackakust also Papasquash neck also from the bay [Narragansett] to Keecomewett.”¹ The same son deeded away what was left of their claim to Rehoboth in 1661.² Massasoit’s other son, King Philip, of undying fame, disposed of inherited lands which show the extent of the family proprietorship: around New Bedford, called Acushena, probably meaning “fish weir,” and Coaxet, or Compton, in 1665, and Wrentham, called Wollomopoak, possibly meaning “red paint pond,” a tract six miles square within the limits of Dedham in 1662; another tract two miles long and a mile broad between Dartmouth and Mattapoissett, between rivers Wanascottaquett and Cawatoquisset in 1667; an island called Nokatay near Dartmouth in 1669; and a tract south of Taunton twelve square miles and another of four square miles near it, of which a certain chief, Captain Annawon (Territory No. 2 of the chart) was part owner in 1672.³

On the basis of this information, then, we indicate on the chart the confines of the territory owned by the family of Massasoit and his heirs.

Another ethnological point to be noted here is the following: Massasoit, we are told, had several places of residence. Like the Indians of Maine and

¹ Drake, *op. cit.*, II, II, 28. This is now Kekamuit.

² *Ibid.*, III, 4, 16.

³ *Ibid.*, III, 14, 16.



FIG. 32.—Martha Attaquin (sister of Mrs. Sturgis), Mashpee.

northern Canada he resorted to one or the other, depending on the abundance of game and fish, but, unlike them, also to a considerable extent on the seasons of agriculture. One was Mount Hope (native form probably Montaup) or Pokanoket.¹

King Philip inherited these resorts, and we hear of his making his headquarters, as his father did, at the same Mount Hope, at Raynham near Fowling pond (where there was formerly a pond nearly two miles long and three-quarters wide, but now is a cedar swamp), and at another picturesque spot overlooking the western shore of Lake Assawampsett.

The latter is still pointed out to the traveler as King Philip's lookout (fig. 7). Referring to the hunting camp at Raynham, the words of a Dr. Forbes are interesting: "It was called King Philip's hunting house, because in the season most favorable for hunting he resided there, but spent the winter chiefly at Mount Hope probably for the benefit of



FIG. 33.—Rosanna Gerard, Mashpee of Gay Head.

¹ Drake, op. cit., II, II, 18.

fishing.”¹ Drake further informs us that Philip had temporary residences at Titicut and Munponset pond, besides the places mentioned previously.²

No. 2. Of considerable importance in the social history of the tribe is the personage of Annawon,



FIG. 34.—William Mills (on mother's side of Pocknet family), Mashpee.

whose patrimonial estates are known to have been near Rehoboth. He is regarded as having been one of King Philip's chief men, if not the next in authority to him. From several accounts it appears that the environs of Squannaconk swamps in Rehoboth township constituted the home

and hunting grounds of this chief. It was he who held in his possession the "royalties" belonging to Philip after the demolition of the tribe following Philip's death.

¹ Cf. Pierce, op. cit., 245.

² Drake, op. cit., II, III, 7.

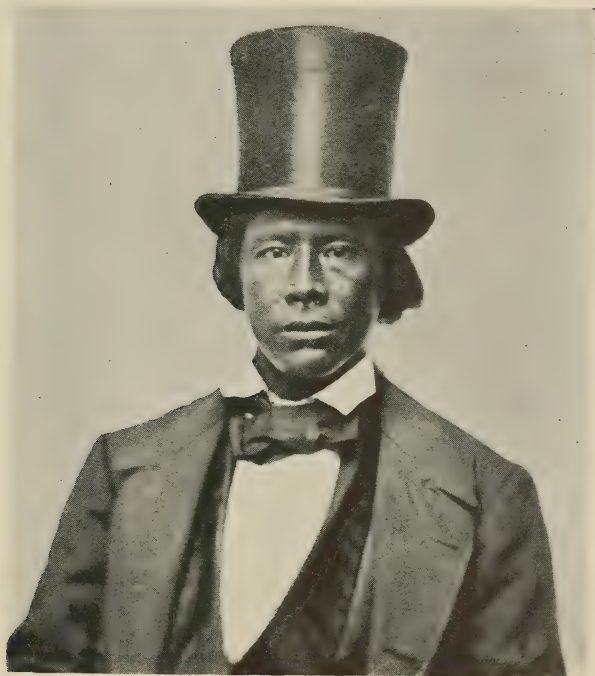


FIG. 35.—James Mye, Mashpee.

This episode is too deeply fraught with ethnological interest to overlook in this connection, since it provides an insight into the political customs of the Wampanoag, involving the use of wampum, analogous to those of the Wabanaki tribes of Maine,

all of whom were no doubt in this particular affected by Iroquois contact.

After Philip's death Annawon returned to his swamp¹ and

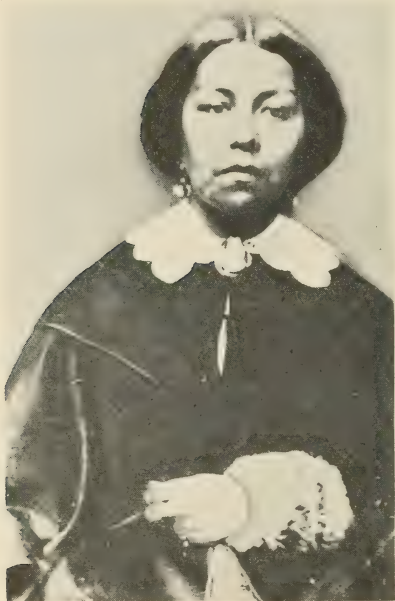


FIG. 36.—Melissa Conant, daughter of Cynthia Conant, Mashpee.

there made his last stand. Here he was taken by Captain Church through a move of picturesque strategy, and the Wampanoag or King Philip's war was ended. Church dictated an account of the event.

While Annawon was lying with his company hidden in Squan-

naconk swamp, Church captured an old man of his band and his daughter. From them he learned

¹ Drake, op. cit., I, 132.

where Annawon lurked with some 50 or 60 men.¹ Church resolved to try to surprise the chief and in the following words describes his accomplishment:²

The Captain then asked the old fellow if he would pilot him to Annawon? He answered, that he having given him his life he was obliged to serve him. He bid him move on then, and they followed. The old man would out travel them so far sometimes that they were almost out of sight; and looking over his shoulder and seeing them behind he would halt. Just as the sun was setting, the old man made a full stop and sat down; the company coming up also sat down being all weary. Captain Church asked, "What news?" He answered, that about that time in the evening, Captain Annawon sent out his scouts to see if the coast were clear, and as soon as it began to grow dark the scouts returned; and then said he "we may move again securely." When it began to grow dark the old man stood up again and Captain Church asked him if he would take a gun and fight for him? He bowed very low, and prayed him not to impose such a thing upon him as to fight against Captain Annawon his old friend. But says he, "I will go along with you and be helpful to you and lay hands on any man that shall offer to hurt you."

It being now pretty dark, they moved close together;—anon they heard a noise. The Captain stayed the old man with his hand, and asked his own men what noise they thought it might be? They concluded it to be the pounding of a mortar. The old man had given Captain Church a description of the place where Annawon now lay, and of the difficulty of getting at him. Being sensible that they were pretty near them with two of his Indians he creeps to the edge of the rocks from whence he could

¹ Hubbard (op. cit., 241) notes that Annawon had twelve men and as many women and children.

² Drake, op. cit., I, 132-142.

see their camps. He saw three companies of Indians at a little distance from each other; being easy to be discovered by the light of their fires. He also saw the great Annawon and his company, who had formed his camp or kenneling place by felling a tree under the side of the great cliffs of rocks, and a setting a row of birch bushes up against it; where he himself, his son, and some of his chiefs had taken



FIG. 37.—Mary Jonas, Mashpee.

up their lodgings, and made great fires without them, and had their pots and kettles boiling and spits roasting. Their arms also he discovered, all set together in a place fitted for the purpose, standing up on end against a stick lodged in two crotches, and a mat placed over them to keep them from the wet or dew. The old Annawon's feet and his son's head were so near the arms as almost to touch them. The rocks were so steep that it was impossible to get

down only as they lowered themselves by the boughs and the bushes that grew in the cracks of the rocks. Captain Church creeping back again to the old man asked him if there were no possibility of getting at them some other way? He answered, "No." That he and all that belonged to Annawon were ordered to come that way and none could come any other way without difficulty or danger of being shot. Captain Church then

ordered the old man and his daughter to go down foremost with their baskets at their backs that when Annawon saw them with their baskets he should not mistrust the intrigue. Captain Church and his handful of soldiers crept down also under the shadow of those two and their baskets. The Captain himself crept close behind the old man, with his hatchet in his hand and stepped over the young man's head to the arms. The young Annawon discovering of him whipped his blanket over his head and shrunk up in a heap. The old Captain Annawon started up on his breech and cried out "Howoh." And despairing of escape threw himself back again and lay silent until Captain Church had secured all the arms, etc. And having secured that company he sent his Indian soldiers to the other fires and companies giving them instructions what to do and say. Accordingly they went into the midst of them. When they had discovered themselves to the enemy they told them that their Captain Annawon was taken and that it would be best for them quietly and peaceably to surrender themselves which would procure good quarter for them, otherwise if they should pretend to resist or make their escape it would be in vain and they could expect no other but that Captain Church with his great army who had now entrapped them would cut them to pieces. Told them also that if they would submit themselves and deliver up



FIG. 38.—Melinda Simonds,
Mashpee.

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all their arms unto them and keep every man in his place until it was day, they would assure them that their Captain Church who had been so kind to themselves when they surrendered to him should be as kind to them. Now they being old acquaintance and many of them relations, did much the readier give heed to what they said; so complied and surrendered up their arms unto them, both their



FIG. 39.—Lucy Simonds (niece of Daniel Queppish).

guns and hatchets, etc., and were forthwith carried to Captain Church. Things being so far settled Captain asked Annawon, "what he had for supper?" "for (said he) I am come to sup with you." "Tau-but," said Annawon with a big voice, and looking about upon his women bid them hasten and get Captain Church and his company some supper. He then turned to Captain Church and asked him whether he would eat cow beef or horse beef? Captain Church told him cow beef would be most acceptable. It was soon got ready, and pulling his little bag of salt out of his

pocket, which was all the provision he had brought with him. This seasoned his cow beef. So that with it and the dried green corn which the old squaw was pounding in the mortar while they were sliding down the rocks he made a very hearty supper. And this pounding in the mortar proved lucky for Captain Church's men getting down the rocks for when the old squaw pounded

they moved and when she ceased to turn the corn they ceased creeping. The noise of the mortar prevented the enemy's hearing their creeping, and the corn being now dressed supplied the want of bread and gave a fine relish with the cow beef. . . . Now when Captain Church found not only his own men but all the Indians fast asleep, Annawon only excepted who, he perceived, was as broad awake as himself; and so they lay looking one upon the other perhaps an hour. Captain Church said nothing to him, for he could not speak Indian and thought Annawon could not speak English. At length Annawon raised himself up, cast off his blanket and with no more clothes on him than his small breeches walked a little way back from the company. Captain Church thought no other but that he had occasion to ease himself and so walked to some distance rather than offend them with the stink. But by and by he was gone out of sight and hearing, and then Captain Church began to suspect some ill design in him; and got all the guns close to him and crowded himself close under young Annawon; that if he should anywhere get a gun he should not make a shot at him without endangering his son. Lying very still awhile waiting for the event, at length, he heard somebody coming the same way that Annawon went. The moon now shining bright



FIG. 40.—Phoebe Pognet, Mashpee.

he saw him at a distance coming with something in his hands and coming up to Captain Church he fell upon his knees before him and offered him what he had brought, and speaking in plain English said, "Great Captain, you have killed Philip and conquered his country; for I believe that I and my company are the last that war against the English, so suppose the war is ended by your means; and

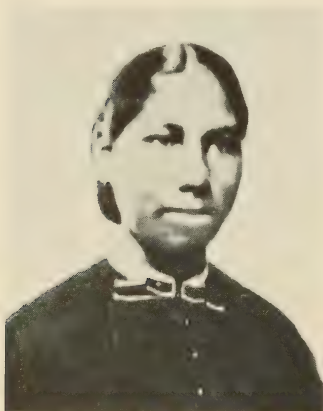


FIG. 41.—Olivia Pognet, Mashpee.

therefore these things belong unto you."

Then opening his pack, he pulled out Philip's belt, curiously wrought with wompom, being nine inches broad wrought with black and white wompom in various figures and flowers and pictures of many birds and beasts. This when hanged upon Captain Church's shoulders, reached his ancles; and another belt of wompom he presented him with wrought after the former manner, which Philip was

wont to put upon his head. It had two flags on the back part which hung down on his back, and another small belt with a star upon the end of it, which he used to hang on his breast, and they were all edged with red hair which Annawon said they got in the Mahog's country. Then he pulled out two horns of glazed powder and a red cloth blanket. He told Captain Church that these were Philip's royalties, which he was wont to adorn himself with, when he sat in state; that he thought himself happy that he had an opportunity to present them to Captain Church who

had won them, etc. They spent the remainder of the night in discourse. And Captain Annawon gave an account of what mighty success he had had formerly in wars against many nations of Indians when he served Asuhmequin, Philip's father, etc.

This event took place on the night of the 28th of August, according to Drake. How tragically the narrative portrays the deep attachment that the local bands had for their lands!

Squannaconk swamp, where the event took place, is in the southeastern part of Rehoboth township, about 8 miles from Taunton in nearly a direct line to Providence. It contained nearly 3000 acres in Drake's time (1722).¹ Now it is a local landmark of some note, and the traditional scene of the action is pointed out as Annawon's rock. A visit to this notorious spot in 1922 showed that its environment has suffered little change since the days of the events just described (fig. 17).

No. 3. The third territory, one of frequent mention and description, is that called Pocasset, embracing the region about the present Tiverton. The name survives in Pocasset neck, a promontory of several miles extent jutting into Narragansett bay. This was the district controlled by another female proprietress, Weetamoe (evidently meaning "lodge keeper"). Her husband, whose name was Petanowowet,² appears in the records only as a

¹ Drake, *op. cit.*, I, 136-138, n.

² *Ibid.*, II, III, 4.

secondary figure beside that of the woman, the "queen of Pocasset." During King Philip's war Captain Church had dealings with him as a spy among his tribesmen and referred to him as "Peter Nunnuit."¹ Weetamoe was a near kinswoman of Philip, which is borne out by the adjacency of their lands. Mather is quoted by Drake as authority



FIG. 42.—Old Phoebe Pog-net, Mashpee. (Mother of Lucy Simonds.)

for the statement that she had some 300 men in her band at the opening of the war, but only 26 at its conclusion.² We learn little more of this unit except that one of its villages or camps was in a swamp back from the shore. Weetamoe was driven from place to place, but stuck to her dominions, finally being drowned out of a canoe in attempting to cross Swansea river while escaping from a party of English. She then was

accorded the distinction of having her head cut off and exhibited upon a pole at Plymouth.³

¹ Drake, *op. cit.*, I, 27.

² *Ibid.*, II, III, 5. Hubbard (*op. cit.*, 238) made the same estimate.

³ *Ibid.*, I, 27.

No. 4. One of the earlier proprietors, whose location was given in 1621 as being about Swansea, is Corbitant or Caunbatant. About him little can be said. Evidently his position was that of a subordinate to Massasoit, as a minor chief with small a local, possibly only a village, dependency. He is regarded by some authorities as having been the father of Weetamoe of Pocasset.

No. 5. One of the most noted chiefs under King Philip was known as Tispaquin or Tuspaquin, to the English sometimes as the "Black Sachem." The name was hereditary in the male line, as we learn from reference to "old Tispaquin" to distinguish the father from his son.¹ A region, large and bountifully supplied with fish and game, lying south and east of Namasket ("fish place") river, including a number of picturesque ponds, was their territory. This tract bore the name of Assawampsett,² a term



FIG. 43.—Angeline Pognet, Mashpee.

¹ Drake, *op. cit.*, II, III, 57.

² *Ibid.*, I, 97.

now applied to the largest of these ponds, the largest body of fresh water in this part of the state (figs. 5, 6, 14). Tispaquin's bounds are reconstructed by the knowledge of several sales which he made to the Plymouth men shortly before the war. In 1667 he made over a deed for land east of Namasket river bounded by Black Sachem, or Tispaquin, pond, and on the other side by a small pond called Asnemscutt.

In 1669 he sold the land extending from the ponds to "the Dartmouth path," and in 1672 from the outlet of Namasket river south by the "pond" to "Tuspaquin's pond." The next year "old Tispaquin" gave a deed to his daughter Betty who had become the wife of Sassamon. Tispaquin's wife was Amie, a sister of Philip and daughter of Massasoit.¹ An interesting and important sequence followed the transfer of land referred to as the bequest by Tispaquin to his daughter. The bounds of this gift of land are specifically given—Masquomoh, a swamp; Sasonkususet, a pond; and a large pond called Chuppipoggut.²

The tract became known as Betty's neck, and so it is still called. And what is of still more interest to the historian and ethnologist is that descendants of the Wampanoag and the actual heirs of old Tispaquin still hold and occupy the legacy in an apparently unbroken line of descent from the original proprietor, and at the same time represent lineal descent from Massasoit. The unique char-

¹ Drake, *op. cit.*, II, III, 57.

² *Ibid.*, 10.

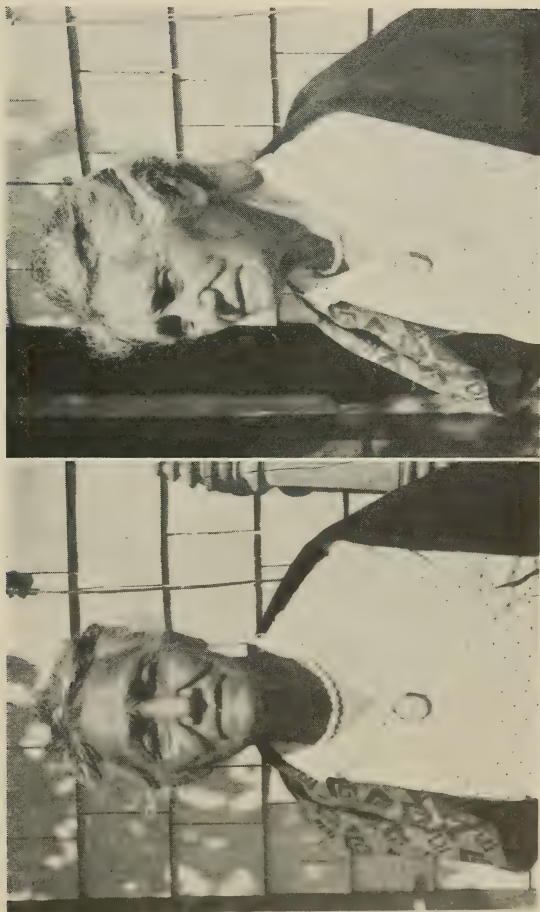


FIG. 44.—Mrs. R. F. Sturgis (Attaquin), Mashpee, age 97 years (1928).

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acter of this case, which incidentally has been unduly ignored in literature, seems to deserve a special review which will be given to it shortly. But before alluding in detail to the present-day survivors of the Tispaquin band and giving such ethnological information as was obtained by Dr. Hallowell and myself in several visits to Assawampsett, I shall complete the general treatment of the family subdivisions. Drake, writing in 1827, evidently from first-hand knowledge, stated that the Indians were still living on the northeast side of Assawampsett lake, being known locally as the Middleborough Indians.¹ He adds that the last full-blood, named Cymon, evidently Simon, had died lately at the age of 100 years.² In his other work Drake further notes that in 1793 there were living at Betty's neck eight families of Indians.³ That some of these Indians, when they were dispersed, went away to Mashpee on Cape Cod is evidenced by the claim of the Pells family there, in which tradition asserts the grandmother of old Foster Pells, of Mashpee (fig. 55), to have been from the Middleboro band.

Earle,⁴ who wrote the report on the Indians of Massachusetts in 1861, enumerated 10 Indians of four families, their names being Hemenway, Monroe, Roman, Wing, and Lee (of Mashpee). At that time also Lydia Squinn (Tuspaquin corrupted) was living.

¹ Drake, *op. cit.*, I, 94.

² Thos. Weston, *History of the Town of Middleboro*, p. 419 (1906), notes the death of the last full-blood here in 1852. He also refers to other survivors, and cites local native place legends.

³ Drake, *op. cit.*, II, III, 10.

⁴ Earle, *op. cit.*, 117.



FIG. 45.—Dorias Coombs, Mashpee.

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No. 6. Adjoining the Tispaquin lands on the southeast lay the holdings of another of Philip's chief captains known as Tyasks, or Tyashk. He is said to have been the "next man to Philip": evidently an important local chief of whom Captain Church's journal said that his men, wives, and children numbered some hundreds.¹ Tyasks was proprietor of Rochester. Toward the end of the war he was encountered in his native haunts below Assawampsett neck on the west side of a "great cedar swamp" and north of New Bedford.

No. 7. Totoson or Tatoson, a chief of whom it is incidentally mentioned that he was of Narragansett affinity, resided in a swamp between Mattapoisett and Rochester. His dwelling is described as being on a plot of high ground in the swamp connected with the surrounding land by a neck over which all had to pass to visit him. This, say the authorities, was on the left of the main road passing from Rochester to Mattapoisett, two miles from the latter.²

Some incidents of Totoson's career, given by Captain Church, are of enough ethnological interest to quote. Church met and attacked him in a swamp in Swansea, on the west side of Taunton river, when the hostile Wampanoag were trying to escape from the country. He described Totoson as "a great stout surly fellow with his two locks tied up with

¹ Drake, *op. cit.*, II, III, 63.

² *Ibid.*, I, 115.

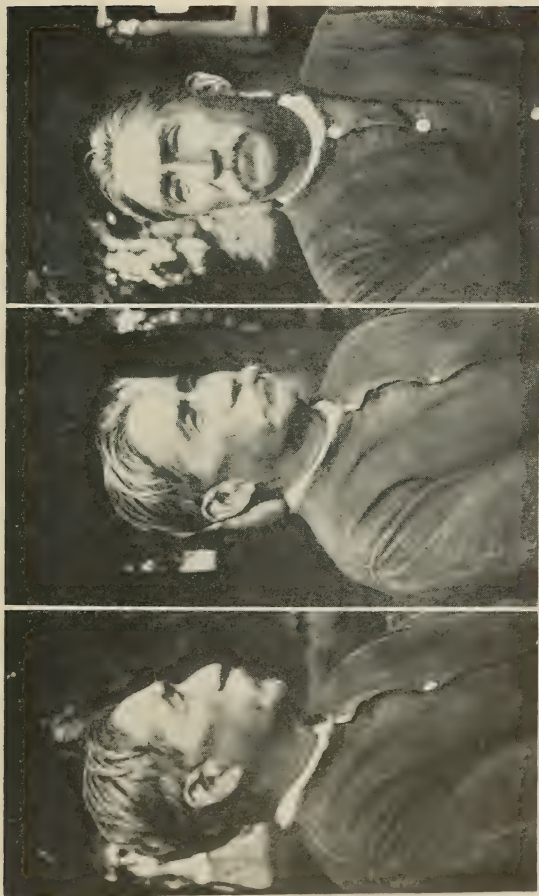


FIG. 46.—Chief Eben Queppish, Mashpee.

red, and a great rattlesnake skin hanging to the back part of his head.”¹ Also Totoson afterward had all his family killed or taken except an eight-year-old boy and an old woman. He returned to his old haunt and there died of grief on the death of his little son. His wife then went to Sandwich and told of it, and there died also.

No. 8. Another of the older proprietors, who lived a generation before those we have just presented who were contemporaries of King Philip and the last to represent the Wampanoag as a nation, was Coneconam or Cawnacome. He was sachem of Manomet, a seemingly rather large tract reaching from Manomet point and Manomet pond almost to Sandwich and evidently partly down the eastern shore of Buzzards bay.² Little more can be done with this and the following proprietor than to enter them on the list and roughly indicate their bounds.

Some Wampanoag descendants still linger in this territory. We shall return to treat them in a few notes farther on under the title of the Herring Pond band, by which name they have become known to local history.

No. 9. A chief named Piowant, or Piant, is recorded as possessor for many years of a tract bounded by a certain Mastucksett brook, extending to Assonet river and so to Taunton river. The place

¹ Drake, *op. cit.*, 115–118.

² *Ibid.*, II, II, 30, 32.

on Taunton river was called Chippascuit, and was situated a little south of Mastucksett.¹

Besides the locations and chief proprietors just given, there are several vacancies which cannot seem to be filled by reference to the chronicles. They are chiefly in the immediate neighborhood of Plymouth. Evidently the neighborhood had been depopulated by the plague which ravaged New England four years before the arrival of the English, as Samoset informed them. Again, nearby was the band of people inhabiting the shores of Munponsett pond in the northern part of the town of Halifax.² That the so-called Munponsett Indians belonged to the Wampanoag may possibly be imagined from the fact that they were joined with the hostiles under King Philip's control and were so treated during the campaign against the Wampanoag by Captain Church.

THE HERRING POND AND FALL RIVER BANDS OF WAMPANOAG

Finally we may trace the survival of the actual Wampanoag residing within the confines of their own territories down to recent times.

In an interesting report by the Indian Commissioners of Massachusetts,³ an extensive account of

¹ Drake, *op. cit.*, III, II, 4.

² *Ibid.*, I, 94-95.

³ J. Milton Earle, *Indians of Massachusetts*, *Senate Papers*, no. 96, 1861.

the social and economic conditions among the Indian bands of the state in 1861 is given. From



FIG. 47.—Mrs. Hammond and daughter, Mashpee.

this document we derive authentic information on family names and numbers of the Mashpee, Herring Pond, Dartmouth, and Marthas Vineyard bands, besides the Wampanoag at Fall River, and some Indians near Dudley in the territory of the Nipmuck. Referring exclusively to the Wampanoag bands, the census of those at *Herring Pond*

gave 62 souls in 19 families. The family names were: Johnson, Nickerson (from Yarmouth), Parker, Pratt, Saunders, Courtland, Webquish (from Mashpee), Wood, Thompson, Ellis, Fletcher, Fowler (from

Nova Scotia), Gardner, Hersch, Blackwell, Jackson, Folger, Conet (Conant), Danzell (from Narragansett), Denison ("mixed foreigner").

At *Dartmouth*, not far from New Bedford, the same author reported a band of 29 families and 99 souls on the west side of Westport river.¹ They comprised Wampanoag descendants of the Acushnet, Acoaxet, and Aponegansett bands. The family names were Wainer, Cuffe, Tilgh-



FIG. 48.—Ezra Conant, Mashpee and Herring Pond Wampanoag.

man, Talbot, Fowler, Boston, Boyden, Crouch, and Potts, Miller, Knobb, Jones, and Douglass, the last five rated as partly of colored blood. They then resided mostly in Westport.

¹ Ellis, *op. cit.*, 111.

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Earle also reported in 1861 a small band of 5 families and 25 souls at *Mamatakesett* pond in Pembroke township near Plymouth,¹ and a few stragglers

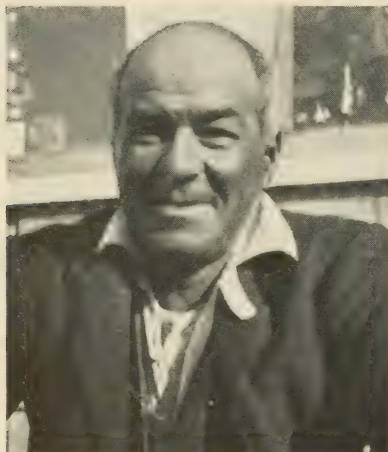


FIG. 49.—Lewis Mills, Mashpee.

under the name of Tum-pums at *Tum-pum* pond.

The largest group of the Wampanoag proper, however, seems to have survived at *Watuppa* pond, three miles from Fall River. They were known as Fall River or Troy Indians. We

shall have to devote more attention to them. I am indebted to Dr. A. I. Hallowell, who has prepared the following report on the history of this group, based on a report published by Dubuque, cited below.

In 1686 the colonial government of Plymouth allotted a tract of land to a handful of friendly Wampanoag Indians. It was situated in Freetown, organized three years before, which at that time included about one-half of what is now

¹ Ellis, *op. cit.*, 113.

Fall River, as well as the territory occupied by Freetown today. A considerable portion of the tract had been in the hands of white men only since 1656, having in that year been sold to 26 of them, in what was known as "Ye Freemans Purchase," by none other than a son of Massasoit and the brother of King Philip. No doubt it originally constituted a portion of Wamsutta's family hunting territory. But Wamsutta did not live to participate in the pivotal events of the succeeding years, and he little dreamed that within so short a time the ancient heritage of his family would be doled out by the English to the traitorous remnants of his tribe who had supported them in their conflict with his nation. For, although Wamsutta's wife, Weetamoe, espoused Philip's cause, her third husband, Petonanuit, together with many of the Pocasset, joined the English, and following the subjugation of the Wampanoag, found themselves in such a disorganized state that their semi-dependence on their white allies became a responsibility which the latter felt obliged to recognize. Not only had these Pocasset friends of the English severed the sentimental bonds which bound them to the defeated remnant of their race, but every family had suffered by the death or disablement of one or more of its members.

The "plantation" originally assigned to these Indians comprised some 120 acres south of the present Notre Dame cemetery, immediately beyond the Rhode Island line, and in addition, a tract on the east side of North Watuppa pond, opposite where the Fall River pumping station is now situated. Eighteen years later the Indians petitioned the Massachusetts government for a single tract of land because they wished all to be together as well as to be farther away from the English. A committee was appointed to look into the matter and to see what land could be had in exchange. In 1707 certain other land in Freetown, belonging to Benjamin Church, was consigned to the Indians.

It is not until forty years later that we get a glimpse of the internal affairs of the reservation. In 1747 it is reported that Rev. Silas Brett is nurturing the spiritual needs of the tribe under the support of a missionary society in far-off England. He mentions that they have a small meeting-house and school in one building. Two years later the State of Massachusetts inaugurated an administrative policy which was designed to keep the legislature

in closer touch with its wards and which permits us to gather more definite information concerning the reservation in succeeding years.

The first step was to appoint three guardians who were to render a biennial report on the condition of the Freetown Indians. But before a report was made, the In-



FIG. 50.—Irving Oakley, Mashpee.

dians initiated a request (1763) to have the reservation divided in severalty, and this was granted the following year, at which time there were only 59 of the aborigines in Freetown. Dubuque¹ cites the result of the census taken in 1764-65, together with the names of the Indians residing

¹ Hugo A. Dubuque, Fall River Indian Reservation, Fall River, 1907.

there. At this time, as in the petition of 1704 and probably earlier, we find the Pocasset assuming English names, usually adopted from the white families friendly to them. The name Church was particularly prominent.

During the remainder of the eighteenth century the plan of having periodical reports made to the legislature does not seem to have been successful, at least no information appears to be extant; but the policy seems to have been re-adopted in the nineteenth century and more systematically carried out. In 1849 the committee reports that 20 acres are owned in severalty and 190 acres in common, that the soil of the land is good but that the "indolent and improvident habits of the tribe render it of little use to them as a means of support." The population is 37 at this date, consisting of 17 males, 20 females, and comprising 10 families. Day labor seems to have been the means by which subsistence was gained by some, others were at sea.

In 1857 the population is 33, six families living on the Indian land and three in the vicinity. "The general condition of the tribe is much better than in former years; the dwellings are in good repair; and some small portions of land well cultivated." During this year Mrs. Zerviah Gould Mitchell, of North Abington, Massachusetts, entered a claim to four lots of the Fall River reservation. She based her rights on the fact that she was a lineal descendant of Massasoit through Benjamin Squannamay mentioned in the allotment of 1764.¹

It is said that "a great portion of them have, for some time, mingled with the general community, their families separated alike from those on the plantation and from each other, while those remaining on the reservation are almost entirely in the incipient or more advanced stage of pauperism, and it is an unquestionable fact that those who have left the plantation are, as a whole, in a better con-

¹ This refers to the Mitchells, still living, who claim rights to the Indian land at Middleboro. See page 87.

dition than those who remain upon it." This centrifugal tendency was of course accelerated beyond repair when the Massachusetts legislature, in 1869, granted full rights of citizenship to the Indian population of the state. The handful of Pocasset then left at Fall River had the



FIG. 51.—Mashpee mother and child.

choice of claiming individual title to the land belonging to their respective families or of having it sold for their benefit. In the year 1907 only one family, that of Fanny L. Perry, was found to be living upon what was formerly the reservation.

We learn something about the fate of the survivors of King Philip's war from the Indian family names



FIG. 52.—Mashpee mother and child.

recorded in 1763 denoting the owners of land on this reservation. The list is given below. When we encounter here the names of characters who were

prominent in the war, such as Sasamon, Titicut, Washunk, and Squin (short for Tispaquin), it is not difficult to conclude that this band of Indians was composed of reconciled warriors, and also included some of the Saconnet, who inhabited the Saconnet peninsula and who, under their woman sachem Awashonks, seem to have formed an independent political body of the Wampanoag. The names in question are Peter Quonewa, Elizabeth Nebe, Sarah Quan, Samuel Titicut, Abigail Tellicutt, (probably an error for Titticut, there being no *l* in Wampanoag), Betty Cockaway, John Sasamon, Peter Washunk, John Yokine, James Demas, John Schomoick (Sochomoick in the partition of 1764), Benjamin Squannamay, Sarah Squinn.¹

In 1849 the following families held land on the reservation: Page, Cuffee, Perry, Crank, Alben, Abner, Simonds, Slade, Talbot, Freeman, Terry, and Landry.² In 1861, Earle listed 72 souls and 16 families as having rights in the reservation. The names of the latter given by him are Allen, Crank,* Simpson, Drummond, Freeman, Gardner, Lindsay,* Mason,* Mitchell, Northrup,* Perry, Robinson,* Slade, Saunders, and Terry.³ At the present time Leroy C. Perry of this group holds the office of chief of the Wampanoag (figs. 3, 4).

¹ Earle, *op. cit.*, 77.

² Dubuque, *op. cit.*, 63-64.

³ The asterisk denotes "foreign" ancestry noted by Earle.

In a volume written in 1878 by E. W. Pierce and published by Mrs. Zerviah Gould Mitchell, is given the documentary and traditional evidence of the descent from Massasoit of the Mitchell family of



FIG. 53.—Alonzo Brown, Mashpee.

Wampanoag residing at Betty's neck near Middleboro. This has been referred to previously. The volume presents the Mitchell genealogy connecting the present generation through eight generations with the famous chieftain. Massasoit's daughter

Amie married Tispaquin, their son Benjamin married Weecum, their son Benjamin Tispaquin married Mary Felix, daughter of John Sassamon of King Philip's war fame, their daughter Lydia Tispaquin married a Wamsley, their daughter Phebe married a Gould, their daughter Zerviah married a Mitchell,

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which brings us finally to the present generation of three living representatives (figs. 1, 2).

At Herring Pond, some 12 miles south of Plymouth itself, there had always dwelt a band known as the



FIG. 54.—George Oakley (Ockree) at the age of about 93. He was a Connecticut Indian adopted by the Mashpee.

Herring Pond Indians on a small missionary reservation established in 1655. Mooney¹ identifies

¹ Mooney in Handbook of American Indians, *Bull.* 30, *Bur. Am. Ethn.*, pt. 1, 544.

them with a band called *Comassakumkanit* mentioned by Bourne in 1674. A few descendants are still to be found in the neighborhood, though during the last century many of them removed to the Mashpee and intermarried there.

At Plymouth there are records of missionary effort and enumerations of these Wampanoag, but their scrutiny may be left for another occasion when it is possible to pursue the opportunity of securing specimens and fragments of ethnology which have undoubtedly survived among the descendants.

As to numbers we have some references. Drake, in 1836, gave them a population of about 40.¹ Mooney evidently based his estimate of 40 in 1825 on the same source.

From Mrs. Rhoda Attaquin Sturgis of Mashpee, however, I obtained some interesting information relative to the Herring Pond people, and the loan of daguerrotype portraits of some of them for reproduction (figs. 18-21). Mrs. Sturgis's mother was of this band, her name being Jones, her own memory covering a span of almost ninety years. She informs us that in her mother's time there were probably 100 Indians living there, the family names being Nickerson, Hersh (Hirsch), Jone or Jonas, Conant or Conet, Pletcher or Fletcher, Gardner and Blackwell. The only family actually represented on the ground in 1921, to my knowledge, was that of Hersh. Many of the families at Mashpee are

¹ Drake, op. cit., II, x.

descended from or related to those of Herring Pond as I have indicated in the captions of their portraits (figs. 36, 37, 44, 48).

Mrs. Sturgis also remembered some Wampanoag living at Half-way pond; several families of Chum-mucks ("poor," cf. Mohegan *tcα'm'αηks*). Into



FIG. 55.—Foster Pells and wife, Mashpee. (Pells is of Wampanoag descent from the Middleboro Band.)

this family had married two daughters of William Apes, the well-known Indian minister, originally a Pequot, adopted by the Mashpee in 1833. He wrote a book of his life.¹ Two brothers, descendants of this family, are known to Mrs. Sturgis—Isaac Chummucks of New Bedford and Jacob Chummucks of Plymouth.

¹ Wm. Apes, *A Son of the Forest*, N. Y., 1829; and *Indian Nullification of Unconstitutional Laws of Massachusetts Relative to the Mashpee Tribe*, Boston, 1825.

Concerning the native populations of this part of the Wampanoag territory there exists an interesting document, written by Wait Winthrop in 1693, giving the names and numbers of converts of three congregations in the environs of Sandwich. This document is in the form of a letter, and it may be seen in the collections of the Pilgrim Society in Pilgrim Hall at Plymouth. It has never been published. Through the kindness of the curator, Mr. Hunt, it was placed at my disposal that its contents might be used in this report. It is superscribed in the following manner: "The number of all the Indians that belong or owns the meeting house of Pomppashpissit in Sandwich of the Mr. Thomas Tuppur his teaching house, of Quâhassit and Wawontat." Two of these three names are native forms of the locations well known today as Cohasset and Waywayontat, both near the region that now bears the names of Bourne and Sandwich. Then follows a list of names, which are very interesting both as a record of native personal naming and as a means of identifying some of the Indian family names at Mashpee, Herring Pond, and elsewhere on the cape and the islands. In the first column are given the names; in the second the numerals refer to children. The orthography not being in every case consistent, and the handwriting often obscure, I have italicized, in my copy, the uncertain letters, since it makes a great deal of difference in Algonkian whether a syllable contains an *n* or a *u*, an *h* or a *k*, and the like.

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John Wahnuk.....	3	Widow Jonas.....	6
Thomas Wartehman.	4	rafe Jonus.....	4
Widow jopet.....	5	John Quoi.....	5
papôm.....	4	Mahtoaanum.....	3
wunnanamuh-		squa appoban.....	4
tukoogk.....	3	James Dillingham..	3
dorhas.....	4	Peter Joseph.....	5
John Connot.....	3	Sampson Waapnut..	5
Will Connot.....	4	Paul Quoi.....	3
Old Wartermán....	2	Ollever.....	5
Widow nanomut of		John Ollever.....	2
nanamot bonts...	5	Old Peter.....	7
	(or 6)	Saul.....	7
John Wánna.....	6	Job.....	4
Isaac Wánna.....	2	Daniel.....	1
Joseph Wánna.....	3	James.....	1
Robert Hood.....	8	jag peny.....	1
Samuel Sannow....	2	Thom Buttler.....	1
John Skupoog.....	2		— 74
Job.....	4	Robert cakunnoyu..	5
Widow poog.....	4	old cakunnoyu....	4
Will Sachimôs.....	3	Elisha cakunnoyu..	2
Widow Wánna.....	5	Jonas Numuh.....	4
John Jopet.....	1	Will numuh.....	2
Will Sannaw.....	1	Will numuk junr...	2
Abel Sannaw.....	1	Lazarus numuk....	1
	— 88	Shanks.....	6
of Manamat		Moses numuk.....	3
Widow haght.....	3	Sam cakunnoyu....	4
Rebecka haght.....	3	Sam aywit.....	2
Isaac Nick.....	3	quakom.....	3
Jacob haght.....	4	joel Shupoog.....	3
quanootas.....	4	hopo.....	3
James Otas.....	5		— 44
Jame Wappog.....	2		

The number is 226 begin at the ten years of old children. 226 this is the number from the ten years old children to the oldis man theris amongst us in March 28th 1693, the famalis rackoned by Raph Jouns

hopo

John Putquoi

Margeshtats

One of the purposes this letter serves us is that it gives location to some names still extant among the bands, though today they show a modified form. Among these is Conot, now Conant or Conet of Herring Pond and Mashpee, and Ollever, now Oliver. It is to be noted furthermore that there was a strong tendency to abbreviate the long native names by using the first syllable or two, sometimes the last, resulting in modifications which become almost impossible to reconstruct again. Examples are: Wunnamuktukoogk to Wanna, Shupoog to Poog, Putquoi to Quoi; likewise, at Middleboro, Tispaquin to Squin; and at Mashpee, Popmonet, Popmonet, to Pocknet and Pognet, one of the commonest names among the families of that band. The fourth name of the foregoing list, papôm, has a suspicious appearance as a possible form of Popmonet.



FIG. 56.—Horatio Amos, Mashpee.

The Wampanoag descendants of the several bands,

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mindful of their past, have in recent years reconstituted the tribe and elected officers. From one of them, Clarence M. Wixon, their own figures for the present numbers of the bands are furnished: Gay Head, 164; Mashpee, 80; Herring Pond, 42; New Bedford, 18; scattered over Cape Cod, Bristol, and Plymouth counties, 146.¹

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There seems to have been somewhat less cohesion among the bands forming the Massachusetts tribal body than what appears to us in the case of the Wampanoag. This may be traceable in part to their less fertile and evidently less populous country, but especially to the proximity of the tribes north of them whom they so dreaded under the name of Tarratines. One of the Massachusetts sachems, met by the English near what is now Boston, informed them that they could not remain long in one place on account of the Tarratines who came at harvest and took away their corn and killed many.² Later the infant colony at Boston was even threatened by an invasion of the same Tarratines in whose name we recognize the Wabanaki tribes of Maine. To a degree which can only be imagined at this time

¹ Correspondence C. M. Wixon, Onset, Mass.; Gladys Tantaquidgeon, August 14, 1928.

² Drake, *op. cit.*, II, II, 40-42.

the depopulation and the transiency of occupancy of the natives of this region may be attributed to its frontier situation, being on the borderland of the aggressive Wabanaki area. It should also be recalled that a devastating epidemic had swept through the territory.

The Massachusetts had close political affinity with the Narragansett in later times and held amity with the Wampanoag.¹ The fact that they suffered, however, from the pressure of the Iroquois is clearly shown by the record that in 1669, after six years' continuance, the war ended in the death of Wampatuck, chief sachem, who invaded the Iroquois country with a band of six or seven hundred men.²

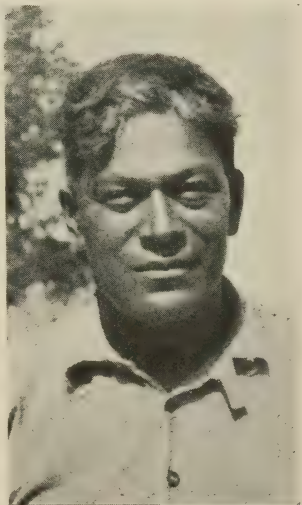


FIG. 57.—Austin Pocknet, Mashpee.

No. 1. Of corresponding rank and importance with Massasoit, of the Wampanoag, we first encounter the figure of Chickataubut, the hereditary

¹ Drake, *ibid.*, 42-43.

² *Ibid.*, 45-46.

principal chief of the Massachusett. That his control extended over a rather wide district south of Boston and included several dependencies which later were subdivided among his heirs is clearly shown by an examination of the records of land transfers from 1665 onward. His name is said to



FIG. 58.—Lester Pocknet, Mashpee.

mean "house afire," which is etymologically reasonable enough to accept. This chief had his principal residence near Weymouth at a place called Passonagesit. At Titicut in Middleboro, adjacent to Massasoit again, he had

a family residence, where it seems he was considered a subject of Massasoit. Like him he too had different places of resort at Neponset, Wessaguscusset, later Weymouth, and especially at Titicut. Further details are wanting, except that in 1621 he with eight other chief sachems

acknowledged himself subject to King James.¹ This gives us, fortunately, an idea of the number of minor dependencies among the Massachusett at that time. We can plot out and locate almost the same number from the literature, following our method of reconstruction. Chickataubut died in 1633 of smallpox, and the disease carried away many of his people;² whereupon his territories became subdivided among heirs, the principal one of whom we have mentioned being Wampatuck, who is next to be dealt with.

No. 1a. Wampatuck, whose name is generally supposed, and with good reason, to mean "wild goose," was son and successor of Chickataubut. The lands actually controlled by him are known from records of sales. In 1665 he sold the district about the present Quincy.³

Wampatuck's name and property went to his son, and it was this Wampatuck, grandson of Chickataubut, who received payment in 1695 for the site of Boston and the neighboring islands. In 1653 he sold a large tract in the vicinity of Accord pond and North river. On this testimony we extend the territory of the Massachusett at least to below North river. In 1662 he sold a tract between Namasket river and a branch of Titicut river, and another between Plymouth and Duxbury on one side and Bridgewater on the other.⁴

¹ Drake, *op. cit.*, II, 11, 43.

² *Ibid.*, 44.

³ *Ibid.*

⁴ *Ibid.*, 45.

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No. 1b. On the arrival of the English at Plymouth, one of the first events in their history was to come into contact with a certain Obatinnewat or Obtakiest,¹ a sachem of the Massachusetts who claimed country south of Boston. He is said to



FIG. 59.—Family of William Sturgis, Mashpee.

have been subject to Massasoit. What this chief's relationship to Chickataubut might have been is not mentioned, but the territory was later ceded by the latter. There is no way of knowing whether both names referred to the same person or whether they were brothers.

¹ Drake, *op. cit.*, II, II, 40.

No. 2. North of Charles river, reaching to about Lynn and Marblehead, the land was owned by a certain Nanepashemet, who, however, is said to have died in 1619, leaving his title to his widow and some sons to be mentioned soon. The name of this



FIG. 60.—Family of Lewis Mills, Mashpee.

chief is clearly translatable as “he who walks at night” or “moon.” Several interesting facts which give an insight into local ethnology are connected with his history.¹ His grave, for instance, was in a house erected upon a scaffold and surrounded by a palisade. The use of palisades was evidently a

¹ Drake, *op. cit.*, II, II, 40–41.

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result of contact with the Iroquois and is known among the Algonkians as far as the Penobscot. Nanepashemet's wall was moreover encircled by a ditch.

The wife of Nanepashemet, renowned as the "squaw sachem," succeeded him, married a chief



FIG. 61.—Types of Mashpee children.

named Webcowit, and later divided the patrimony with three often mentioned sons. This band of the Massachusetts was evidently in close touch with the Nipmuck and the Pennacook, because the "squaw sachem" later married a Nipmuck chief of near Concord and one of the sons married a daughter of the head chief of Pennacook. No doubt this was the outcome of the weakness of the Massachusetts resulting from the combined effects of the plague

which decimated them just before the coming of the English, and the attacks of the Tarratines of whom their complaints are so frequently cited in the literature of the times.



FIG. 62.—Mashpee children showing extremes of foreign mixture (1921)

No. 2a, 2b, 2c. The three sons of Nanepashemet were respectively Winnepurkit, proprietor of Deer island and Boston harbor, 2a; Wonohaquaham, sachem of Chelsea and Saugus, 2b; and Monto-

wampate, sachem of Lynn and Marblehead, 2c.¹ There is but little more to say of these men or their territories. The smallpox of 1633 greatly reduced the population of their lands. We learn that on the territory of Wonohaquaham, as recorded previously of other chiefs, there were shelter wigwams at places where they were accustomed to pass. The occasion of this reference is that these lodges were burned by an Englishman for which the chief finally received compensation by voyaging to England.² Winnepurkit made himself famous by marrying a daughter of Passaconaway, chief sachem of the Pennacook, and has been immortalized by Lowell in "The Bridal of the Pennacook."

No. 3. Nahant and Swampscot belonged to a chief named Manatahqua, or Black William, of whom we hear little beyond the statement that his father was sachem there before him, affording another evidence that in this region descent was patrilineal.³

No. 4. A tract five miles square east of Concord river, lying between the lands of the "squaw sachem" (*No. 2*) and those of Cutshamakin, is recorded as the possession of one Cato, a brother of the latter. This tract adjoining Sudbury was sold in 1648.⁴

¹ Drake, *op. cit.*, II, II, 47.

² *Ibid.*

³ *Ibid.*, 48.

⁴ *Ibid.*, 53.

No. 5. Based on a statement that the territory around Natick, where John Eliot commenced his missionary efforts in 1648, was preciously owned by a chief named Nahaton, we outline this tract as a minor holding, No. 5. This, however, is all that is known concerning it.

No. 6. Cutshamakin, Cutshamequin, or Kut-chamakin, translatable as "big feather," was a sachem of considerable importance among the Massachusett, and brother to Chickataubut.¹ His name appears in many connections in the documents, first in 1632-33 as one of the signers of the allegiance of the Massachusett chiefs to King James, and later, in 1636, as one of the factors in ushering in the war between the English and the Pequot of Connecticut. He at that time accompanied a party of English and deliberately killed a Pequot which involved the native process of vengeance. His territory was about Dorchester, Sudbury, and Milton, which was sold by him in 1636.²

In the territory of this chief, and no doubt one of the important inland settlements, was Punkapog, which by 1674 had become one of the two "Praying towns" of Massachusett Indians converted by the missionary John Eliot. The town in 1674 had a population of about 60 in 12 families.³ Punkapog is now the only locality where descendants of the

¹ Drake, *ibid.*, 45.

² *Ibid.*, 52-53.

³ *Ibid.*, 114, 115.

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almost forgotten Massachusetts may still be found. Owing to the unusual interest associated with this circumstance I subjoin a short account of a visit to



FIG. 63.—Mashpee boys and Indian schoolhouse at Mashpee (1907).

the community which I made in 1921, and some ethnological and historical information obtained at the time (see Appendix).

There are two important Massachusetts chiefs of 1623 whose locations do not seem to be given anywhere, so far as search has gone. They were Wituwamet and Peksuot. These men were implicated in a plot among certain bands on Cape Cod and the islands to destroy the English in 1623.¹ Capt. Miles Standish quelled this uprising and killed both.

INDIANS OF THE ISLANDS

The tribal identity of the Indians inhabiting the islands south of Cape Cod has never been accurately recorded. In early times the general name of South Sea Indians was often applied to them as well as to those of Cape Cod. In most narratives those of Marthas Vineyard and the islands were definitely considered subject to the Wampanoag, though it is a noteworthy fact that they did not coöperate with King Philip in his war upon the English. An affinity in dialect, however, did exist between the peoples of the islands, both Nantucket and Marthas Vineyard, and even over entire Cape Cod. Yet on several occasions differentiation was noted in the records between the speech of the mainland and Marthas Vineyard which would mean something to us if we had more comparative material. Since

¹ Drake, *op. cit.*, II, II, 32-35.



FIG. 64.—Scene in village of Mashpee near the Indian school.

their cultural affinities cause us no trouble, we are perplexed only by the political ties. Yet there are several statements on record which complicate the situation somewhat, and these, I believe, should not be lightly waived. For example, the inhabitants of Nantucket are asserted to have formed two groups originally hostile to each other. The island is approximately only 10 by 15 miles in extent. And yet the circumstance of hostility among small insular groups seems not so unusual when other similar cases in adjacent regions are considered. We learn of tribal wars on Block island, a very small spot not

far away, which originally belonged to the Pequot and later passed by conquest to the Narragansett. It might be inferred that the condition described for Nantucket was due to a similar cause, namely, the invasion of one population by another. We may imagine that, since Marthas Vineyard was Wampanoag, by the authority of competent sources, the people on the western end of Nantucket, facing Marthas Vineyard, were likewise Wampanoag invaders, and the others Nauset whose history and ancestry were associated with the next nearest inhabitants, namely, those of southeastern Cape Cod in the neighborhood of Chatham, Nauset, and Monomoy, not more than 12 miles directly across from Nantucket by water.

On the assumption then, which may indeed seem



FIG. 65.—Mashpee homestead overlooking Mashpee pond.

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beld to anyone who has taken enough interest in this question to pursue it thus far, I have indicated on the chart the tribal connection of the western Nantucket peoples with those of Marthas Vineyard, here distant only about 8 miles by open water separ-



FIG. 66.—Daniel's (Daniel Queppish's) island at Mashpee neck—a typical fishing station and home location of the Mashpee.

ating the intervening islands. The Cape Cod populations then, the so-called Nauset, I have marked as including those of northern and eastern Nantucket. At the most, however, we are distinguishing now only the subdivisions of a single ethnic and dialectic group, whose boundaries embraced everything from

the Narragansett to the Pennacook about Merrimac river.¹

Commencing with the band on Marthas Vineyard, which bore the native names Capawack,² Cepoge, and Nope, there is little that need now be said



FIG. 67.—View from landing place on Daniel's island, looking eastward. A Mashpee fisherman passing the point.

concerning geographical divisions beyond repeating that they were regarded as an original offshoot of

¹ The dialectic stamp of this group is the use of *n* where others employ *h*, *v*, and the *c* (*sh*) inanimate plural.

² Some discussion has arisen among historians over the meaning of this term and its original application. Not to add to the confusion existing, I could nevertheless suggest that a derivation from southern New England *guppi*, "covered, cloudy, overcast," be considered.

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the Wampanoag, and adding that they are still the best preserved and most numerous of the southern New England Indian remnants. At the time of their conversion by Thomas Mayhew, Jr., shortly after 1642, they were ascribed a population of some 1500. In 1698 they were reduced to 1000, including those on Chappaquiddick. Their number appeared as 313 in 1764, and 360 in 1807. Drake computed them in 1800 at 200, and said that they were probably Wampanoag.¹

At present they have kept their identity intact, residing in a community at Gay Head at the western extreme of the island, where they dwell far from the beaten track of commercial influence (figs. 24-30). And here they still preserve enough of ancient characteristics and ethnological knowledge to require attention at the hands of investigators for some time before the matter can be dealt with in print.² Some of them have intermarried with the inhabitants of Mashpee over on Cape Cod. The former occupants of the island of Chappaquiddick, the considerable island adjoining Marthas Vineyard on the east, under a chief of 1642 named Pahkepun-nassoo, may also be mentioned from contemporary knowledge, for there were until lately some recognized Indian descendants on that island.

¹ Drake, *op. cit.*, II, x.

² In 1928, Miss Gladys Tantaquidgeon, of Mohegan, a student at the University of Pennsylvania, undertook the task of recording tales and folklore from the members of this community and intends to devote some time to its fulfilment.

From the State report by Earle on the Indians of Massachusetts in 1861, referred to previously, we derive our knowledge of the fundamental family names among the three or four bands on Marthas Vineyard and Chappaquiddick. From this source I have arranged the table of names and numbers as



FIG. 68.—View from landing place on Daniel's island, looking southward.

representing the status of these people in 1859–61.¹

On Chappaquiddick Island, 74 souls, in 17 families. The family names were: Belain, Cook, Curdoody, Goodrich, Gould, Simpson, Harris, Joseph, Summons, Taylor, Joab, Layton, Jonas, and Sams. The foreign Indian and other racial family heads were

¹ Earle, *op. cit.*, 15, 25, 115.

Curtis, West, Ross, Brown, Martin, Mathews, and Webquish of Mashpee.

At Christiantown (Tisbury), 53 souls, in 14 families. The family names were Anthony, deGrasse, Mingo, Francis, Goodrich, Peters, James, Spencer, Grant, and Belain.

At Deep Bottom Earle met a small independent group having at that time no organization but remaining separate from those of Gay Head and Christiantown. They numbered 13 souls and formed 4 families. Being only about five miles west of Edgartown, they were evidently but an offshoot of the other group. The family names here were Easton (Narragansett), Freeman (Chappaquiddick), Jackson, and Harris.

At Gay Head, 253 souls and 54 families. The family census and general treatment of this large band will be reserved for a separate study and report. Much still remains to be done among the descendants here because their isolation has caused the preservation of some native customs and beliefs.¹

¹ Earle's list of Gay Head family names may be given to serve as a check on the distribution of names among neighboring bands. He gave Ames, Anthony (Portuguese), Bassett, Bclain (Chappaquiddick), Bowyer,* Brown,* Cole, Cook, Cooper, Corsa,* Cuff, David, Devine, Dodge, Diamond (foreign Indian), Francis, Howwoswee, Holmes, Jeffers, Jerard (foreign?), Johnson, Madison, Manning, Nevers, Peters, Randolph (Haiti), Rodman (Narragansett), Rose, Sylvia (Portuguese), Sewell, Shepherd,* Stevens, Thompson (Mashpee), Thomas, Vanderhoop (Surinam), Walmsley, Weeks, Williams,* Aucouch, Deming,* Henry,* Haskins,* Howard,* Jordan,* Powell,* Ockray, Lewis. The asterisk denotes mixed ancestry noted by Earle.

No Indian survivors have dwelt on Nantucket since the death of Abram Quarry in 1855. Although there is no definite information coming from him which would help us in solving our problems, nevertheless several not uninteresting reminiscences concerning this old Indian are handed down by Mrs.



FIG. 69.—Marshes and islands near mouth of Mashpee river.

Sturgis, an Indian woman of 93 years of age at Mashpee. She recalls having visited Quarry at Nantucket with her father, Solomon Attaquin, when she was about 15 years of age. Quarry was very Indian in appearance, wore long hair, and could speak Indian.

We may conclude the mention of the Marthas

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Vineyard Indians, for the present, with the statement that the body formerly had subdivisions to the number of four, with local sachems and some minor proprietors. The sachems Epanow and Miohqsoo (also given as Myoxeo) are mentioned for the island, though it is not expressly stated which one, if either, was supreme. The latter made him-



FIG. 70.—Parker river near Yarmouth, territory of Iyanough (No. 8)

self notorious to the missionaries of early days, and interesting to the ethnologist of this day, by declaring that he could reckon up 37 of his gods.

On the neighboring islands of the Elizabeth group, especially Naushon, were populations evidently culturally but not politically affiliated with the Wampanoag, judging by the testimony of several

accounts. The Indians of Naushon were said to be hostile to those on the mainland; for a local legend relates how the mainland people persuaded the devil to throw a rattlesnake onto the island. The snake grew and bit a woman, hence the breach of friendship. Another related how the "devil" was building a bridge from the mainland to one of the smaller islands, how a crab caught him by a finger, and how he then threw it toward an island 20 miles away, where as a result the crabs now breed.¹ These tales belong in the transformer hero cycle of the island Indians, the tales being now in process of preparation by Miss Tantaquidgeon. That the Wampanoag had frequent recourse to the shelter of the Elizabeth islands is shown by the flight of Tatoson, one of Philip's captains (page 74), with his son or nephew, Penachason.² The latter may have even given his name to one of these islands now called Penekese.

Fortunately for the purpose in view we have a dependable study of the Indians of Marthas Vineyard by Banks,³ the historian of the island. Access to this material and additional aid rendered through the Dukes County Historical Society, by its president, Mr. Marshall Shepard of Edgartown, have enabled me to collate and arrange the informa-

¹ Gustave Kobbé, *An Island in New England*, *Century Magazine*, LVI, N.S. XXXIV, p. 754 (1898).

² Drake, *op. cit.*, II, III, 86.

³ Charles E. Banks, *History of Martha's Vineyard*, 3 vols., Boston, 1911.

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tion pertaining to the land-tenure system and social characteristics of this interesting division of the Wampanoag in the following manner:

Four major sachemships existed in the region at the time of the coming of the whites, about 1641. Two of the chieftaincies were situated upon the main island, another on the western promontory, and the third on the adjacent island of Chappaquiddick.¹

On the map these are denoted by numbers. The two extreme divisions were separated by water boundaries from the island; the two on the island itself were segregated by a line drawn from Black-water brook to Watchet on the south shore, according to our authority, established by bounds "settled many years ago."²

1. Nohtooksaet, sachem of Gay Head, known as Aquinuh in the records (*Aquene ut* as rendered by Banks, evidently on the authority of W. W. Tooker whose aid was sought by Banks in his study of local native nomenclature). This chief came from Massachusetts Bay.³ His son Mittark, 1675, succeeded him. He in turn was supplanted by Omphannut who established a claim to the office as the eldest son of Nohtooksaet.

2. Mankutquet, sachem of the western section of the island called Takemmy (rendered as Taakemmy).

¹ Banks, op. cit., p. 39.

² Ibid., p. 43, quoting Tisbury Records.

³ Ibid., p. 40, quoting Indian converts, 67.

A. Wannamanhut, sub-sachem of Christian-town, who came from toward Boston and "settled at Takeemee."

B. Toohtoowee, sub-sachem, 1673, of the north shore of Chilmark, known as Keepigon.

3. Tewanticut, sachem of the eastern section of the island called Nunnepaug (Nunpoak).

A. Cheesehahchamuk, sub-sachem of Homes' Hole, 1658, succeeded by his son Ponit, 1685.

B. Wampamag, sub-sachem of Sanchakan-kacket, 1660, son of Adommas, "queen sachem," as she was called.

C. Tom Tyler, a prominent Indian, 1675, living about Edgartown, who had come from Ipswich, Mass., where his father, a sachem Masconomet, had sold away the land. Tyler does not appear in the records as a sub-sachem.

4. Pahkepunnasso, sachem of the island of Chappaquiddick (rendered as *Tchepe aquiden et* by Banks, probably on the authority of Tooker).

That the islands, and it seems especially Marthas Vineyard, proved a haven for refugees fleeing from the devastating conditions that confronted the Indians on the mainland is evident in the instances of migrations recorded and by the relatively high population estimates for the region. The fugitives continued to come after the close of the colonial wars; for among the Indians still living at Gay Head the mainland extraction of many of the family

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ancestors is pointed out, as for instance, the Jeffers family traces its sources to Thomas Jeffers of about the fourth generation back from the present man of this name, who came from the Middleboro band, the Cooper and the Taknot families from Mashpee, and so on. That the same was true of earlier times still is vouched for by the provision, noted by Mayhew in the middle of the 17th century (see page 26), to fix in the social scheme the subordinate position of outsiders who came to reside on the island.

SUBDIVISIONS OF THE NAUSET OF CAPE COD

The question of the territorial boundaries of the Nauset, which term comprises the populations of Cape Cod, is rendered simple by the water boundaries of this remarkable projection of the coastal plain. The only difficulty lies in the determination of the eastern extension of the Wampanoag claims. If, however, we accept the statement that the territory known as Manomet included both the headland south of Plymouth and the eastern shore of Buzzards bay, which preserve the name in common, the difficulty is lessened. East of the Manomet area, then, we hear little of Wampanoag control. Evidently it is to be accounted as the boundary of the independent Nauset group, subdivided into several well-known chieftancies whose bounds are in general

possible to define. Before giving the survey of these subdivisions, however, a few remarks might be repeated concerning what little is known of the culture features of the Nauset of the Cape and their Wampanoag relatives. From specimens of the Cape Cod dialect, preserved by some of the descendants



FIG. 71.—Stunted pitch-pine forest and marshes near mouth of Pamet river, territory of Aspinet. (Near here were found the Indian corn-hills at the first landing of the Pilgrims, 1620, and more again in recent times.)

still residing there, it would seem that the phonetic characteristics of the Massachusetts-Wampanoag-Narragansett group are here maintained.¹ Lexically there may have been a slight deviation. In other respects the ethnological memories of the Cape tribe seem to show a slight variance from the mainland

¹ J. D. Prince, *Last Living Echoes of the Natick*, *Amer. Anthr.*, IX, 493-498, Lancaster, 1907.

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customs, judging by the fragmentary records that we possess. The use of sedge-grass covered wigwams might for instance be mentioned, and the greater prominence of fishing. Moreover, a rather numerous body of descendants, at Mashpee near the south shore, survives and gives promise of yielding considerable information when time and opportunity may be found for complete investigation. Mashpee has, however, been a haven for Indians from different parts of Massachusetts, so much so that it is not easy to decide whether the people here are more Wampanoag than Nauset. Drake in 1827, for instance, recorded them as "chiefly a mixed remnant of the Wampanoag," numbering about 400.¹ From the personal testimony in respect to genealogy of older Indians at Mashpee it would seem that the band has received accretions from the Wampanoag of Middleboro and Herring Pond, also from Marthas Vineyard and even slightly from the Pequot of Connecticut. Nevertheless, from the location of the mission and its absorption of Christian converts from various parts of the Cape, the first tendency would be to regard the surviving ethnological fragments as Nauset characteristics. There is little reason to suppose that borrowing was not a general trait over the whole extent of southern Massachusetts. The geographical nature of Cape Cod makes it logical to assume that the relatively dense population sub-

¹ Drake, *op. cit.*, II, x.

sisted largely by fishing. The location of many missions over the extent of the Cape gives a good idea of the distribution of the units and their population, but the bounds of control of the various sachems and their names are not so well recorded. Nor do we meet the same information concerning the questions of inheritance and control that gratify



FIG. 72.—Typical stunted *Pinus rigida* forest near Wellfleet, territory of Aspinet.

our curiosity on this point among the Wampanoag.

Only four local sachems are well known by their names. The records of land sales do not serve the explicit purpose here that they do in the neighboring regions, making it impossible to do more than to locate the territorial subdivisions by announcing their centers.

At the upper part of the peninsula, where the Cape populations adjoined the Wampanoag of the

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Manomet division, there is much uncertainty. Mashpee, the largest mission of later years, and its predecessor, Sandwich, being in this undesignated territory, undoubtedly owe their heterogeneous composition to their border situation and their easy accessibility to refugees from the Wampanoag and other tribes which were destroyed by the English from time to time.

A total population of 462 in 1674 is computed for the various inhabited centers,¹ known then as "Praying towns." At Meeshawn, since Provincetown or Truro, and Punonakanit, since Billingsgate, 72 persons; at Potanumaquut or Nauset in Eastham, 44; at Monomoyik, since Chatham, 71; at Sawkatukett in Harwich, Nobsquassit in Yarmouth, Mattakees in Barnstable and Yarmouth, and Weequakit in Barnstable, 122; at Satuit, Pawpoesit, Coatuit, Mashpee, Wakoquet near Mashpee, at Codtaumut in Mashpee, Ashimut on the west line of Mashpee, Wessquobs, 22; Pispoquutt, Wawayoutat, in Wareham, Sokones in Falmouth, 36.²

The population for the same area was computed as being even more numerous at a later time when in 1685 Governor Hinckley reported about 1000 Praying Indians in Barnstable county. But by the

¹ Drake, *op. cit.*, II, II, 118, quoting Rev. Richard Bourne, the missionary of the time residing at Sandwich.

² In a previous passage (p. 91) information from the period 1693 has been given on the settlements around Sandwich, the places Pispoquutt and Waywayontat being referred to as Pomppashpissit and Wawontat.

time of the Revolution it had shrunk to much less, and the survivors then held only a few points, at Yarmouth, at Sandwich, and especially Mashpee. When we come to mention this last stronghold of the Cape tribes, no small amount of confusion in identity is met. For Mashpee has become the



FIG. 73.—View across Wellfleet Harbor from near Indian Neck, territory of Aspinet.

melting-pot of the tribes whose dispersed members congregated from all the adjacent territories. Accordingly a brief review of the vital history of this native settlement seems called for. Some attention has evidently been given to the population of Mashpee because the range of years shows frequent visits from writers, both clerical and secular, who recorded their observations and enumerations rather generously for us. Illustrating this, we have

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the following chronological summary of historical events and estimates of population.¹

1674....	117
1685....	141 (Gov. Hinckley's report)
1698....	515
*1767....	292
*1771....	327
1800....	380 souls, 80 houses
1812....	357
*1832....	315
1834....	Mashpee incorporated as a town
1838....	278
*1849....	305
1850....	202
*1859....	403
*1861....	371 (93 families) including absentees
1880....	346
1885....	311 (79 voters)
1889....	75 assessed voters, males
1910....	206 (U. S. Indian Census, p. 125)
1920....	about 230 ² (total population of town, about 252, about 20 whites and others, mostly Portuguese, known locally as Bravas)

A brief survey of the genealogy of Mashpee families makes possible the ensuing classification, giving the most important family names and their tribal connections, from information furnished by Mrs. Sturgis:³ Attaquin, Amos, Coombs, Cooper, Pock-

¹ Some of this material is based on records published by S. L. Deyo, *History of Barnstable County*, 1890, p. 708, while the figures marked with an asterisk are taken from Earle, *Indians of Massachusetts*, 46-47.

² Information from Mr. Ferdinand Mills, Mashpee town clerk.

³ Earle in his frequently cited report (1861) lists the following families with the racial derivation of some of them: Attaquin, Amos, Alvis, Butler, Brown, Baker (Chap-

net, Wilber, Tobias, Jones or Jonas, Mye, Simon, Briant, Asher, Cowit, Squibs, Queppish, Webquish, are all old original Mashpee families. In addition the list includes Mingo, said to have migrated from Chappaquiddick; Foller, of unknown extraction, but possibly tracing back to Fowler, which is common among the Long Island Indians and at Mohegan, Connecticut; James, also uncertain; Pells, given as of Wampanoag extraction from Middleboro; Alvas, of Portuguese origin; Keeter, thought to be of Narragansett origin; Hammond, thought to have migrated from Sag Harbor, Long Island, possibly Montauk; and Oakley, Ochrey, of rather recent Connecticut origin, supposedly Pequot. In addition, the descendants of the Simonds or Simons family entertain a belief through traditional information that their ancestor was a Pequot. This being a common family name among the Mohegan of Connecticut and likewise mentioned by Drake as having occurred at Middleboro, we are left in uncertainty as to whether it was formerly a single family group springing from Connecticut, possibly Pequot, or whether the name appeared severally

paquiddick), Cesar, Coombs, Ceturn, Casco, Cowett, Carsar, De Grasse, Edwards, Foller, Freeman,* Gardner,* Godfrey,* Hammond, Hendricks,* Hersh, Holmes, Holland,* Hicks,* Hinson, Jackson,* James, Jonas,* Johnson,* Keeter, Kennedy, Lippett,* Layton,* Low,* Manning, Lee, Lyons, Mashow,* Mingo,* Mills, Mye, Ockry, Pells, Pocknet, Pompey, Quippish, Sewall,* Simon, Simmons, Stanley, Thompson (Gay Head), Webquish, Wickham, Webster, Whiting, Wilbur, Young,* Smith, Rollins. The asterisk denotes alien ancestry noted by Earle.



FIG. 74.—Brush sacrifice heap, or "tavern," at junction of Mashpee and Waquoit road, an old Indian trail to shellfish grounds at Waquoit (September, 1922).

among the early New England tribal groups. Colonial history records some of these names in events connected with the Indians involved in King Philip's war in the service of the English. The original Amos, whose name is still prominent among the Mashpee, is mentioned as a Wampanoag of Cape Cod who immortalized himself by a noteworthy action, in the words of Drake¹ as follows:

Amos, commonly called Captain Amos, was a Wampanoag, whose residence was about Cape Cod. We have no notice of him until Philip's war, at which time he was entirely devoted to the service of the English. After the Plymouth people found that Tatoson was concerned in the destruction of Clark's garrison, they sought for some friendly Indians who would under-take to deliver him and his abettors into their hands. Captain Amos tendered his services, and was duly commissioned to prosecute the enterprise, and to take into that service any of his friends. Meantime, Tatoson had fled to Elizabeth Island, in company with Penachason, another chief who was also to be taken, if he could be found. This Penachason was probably Tatoson's brother's son, sometimes called Tom, whom if the same, was also at the destroying of Clark's garrison. Yet the wily chiefs eluded the vigilance of Captain Amos, by flying from that region into the Nipmuk's country, where they joined Philip.

To encourage greater exertion on the part of the friendly Indians, to execute their commission, it was ordered, that in case they captured and brought in either Tatoson or Penachason, "they may expect for their reward, for each of them four coats, and a coat apiece for every other Indian that shall prove merchantable."

¹ S. G. Drake, *Biography and History of the Indians of North America*, Boston, 1837, Book III, pp. 85-86.



FIG. 75.—Site of the sacrifice heap, or "tavern," at the junction of the trail from the Mashpee village to the old Indian church and road from Santuit. The spot is now overgrown with scrub. The figure stands directly in front of the pile of decaying brush.

We have mentioned in a former chapter the horrid catastrophe of Captain Peirse and his men at Pawtucket. Captain Amos escaped that dreadful slaughter. He fought there with 20 of his warriors, and when Captain Peirse was shot down by a ball which wounded him in the thigh, he stood by his side, and defended him as long as there was a gleam of hope. At length, seeing nearly all his friends slain, with admirable presence of mind he made his escape, by the following subtle stratagem:—

Nanuntenoo's warriors had blackened their faces, which Captain Amos had observed, and by means of powder contrived to discolor his own unobserved by them. When he had done this, he managed, by a dextrous manœuvre, to pass among the enemy for one of them, and by these means escaped.

What were Captain Amos's other acts in this war, if any, we have not learned; nor do we meet again with him until 1689. In that year, he went with Col. Church against the eastern Indians and French, in which expedition he also had the command of a company. Church arrived with his forces in September at Casco, now Portland, and, having landed secretly under cover of the night, surprised, on the following morning, about four hundred Indians, who had come to destroy the place. Although the Indians did not receive much damage, yet, Governor Sullivan says,¹ the whole eastern country was saved by the timely arrival of this expedition. In the fight at Casco, 21 September, eight of the English were killed and many wounded. Two of Captain Amos's men were badly wounded, and Sam Moses, another friendly Indian, was killed. There was another Indian company in this expedition, commanded by Captain Daniel, out of which one man was killed, who was of Yarmouth on Cape Cod.²

Two of the other Mashpee family names are associated with traditions worth mentioning in this

¹ Hist. District of Maine, 102.

² MS. letter of Captain Basset of the expedition.

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connection. The Attaquin family, represented by Mrs. Sturgis, entertains a tradition of descent from Massasoit. The family name of Pognet, or Pocknet, is probably the commonest one among the Mashpee. It is believed to be a corruption of Popmonet, or Popponet, mentioned as one of the first converts to Christianity among the eastern Massachusetts

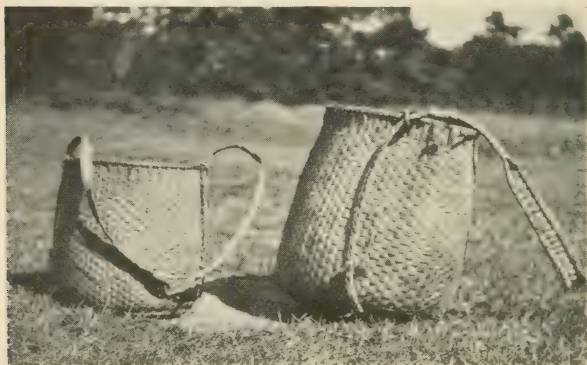


FIG. 76.—Mashpee "back baskets." (Note the diagonal pattern produced in the weave of the basket at the left)

tribes. In the first half of the eighteenth century Simon Popmonet preached for forty years to the Mashpee. The name Coombs at Mashpee may be the modernized form of Hiacoomes, a convert of Marthas Vineyard.

From the foregoing remarks it appears that the general makeup of the inhabitants of Mashpee, in

spite of some foreign Indian, as well as white and Portuguese, admixture, is fundamentally Wampanoag and Nauset. This determination may help us hereafter in classifying the ethnological survivals waiting there to be recorded.

The first definitely mentioned sachem of the usual type to be encountered on the Cape east of Coneconam of Manomet, a Wampanoag (territory 8 of this tribe), is Iyanough, Wiananno, or Hyannis, variously spelled, of the region about Cummaquid, now Barnstable.¹ How far west and east he controlled is uncertain. His population may have been near 122, judging by figures given in the above list. There is, however, little more recorded of this sachem that would serve our present purpose. Mention of him is mostly concerned with historical relations.

Some of the descendants lingered about Yarmouth, at Bass river, until 1861. In his painstaking survey Earle enumerated 105 souls and 23 families, more or less remotely of Indian blood. He says that the ancestor was an Indian, partly of Mashpee and partly of Herring Pond descent.² The family names were: Baker, Brooks, Cash, Chase, Cobb, Cook, Crocker, Craig, Holloway, Haskell, Nickerson, Rogers, Smith, Ellis, and Taylor, residing in Yarmouth, Barnstable, Orleans, and East Sandwich. Mrs. Sturgis of Mashpee remembers seeing in her

¹ Drake, *op. cit.*, II, II, 14.

² Earle, *op. cit.*, 109.

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girlhood a family named Lindsey when she went there with her father. She thought there may have been about 10 families. They resided, in her time, on the western bank of Bass river. The site of the old reservation is now marked by an inscribed boulder near South Yarmouth.

Beyond Iyanough, on the southern projection of the peninsula, lived the people of Manomoy, or Monomoy, now Chatham, under the chieftainship of Ouasson, the only leader of whom we have definite knowledge, dated rather late, 1762, whose band comprised only 30, the remainder of its content of 115 persons in 1685.¹ The Bourne list of Praying towns on the Cape gives 71 for Monamoyik in 1674.

Above this region was Nauset, now embracing the stretch of country from Eastham to Truro, where dwelt the Nauset group proper, under Aspinet of 1621. We lack also further territorial knowledge of the residence and conditions of this sachem and his people. When Aspinet was visited by the English in 1621 he had in his company no fewer than a hundred men. In the Bourne list, referred to above, 72 persons were mentioned for Truro and Billingsgate, and 42 for Nauset in Eastham, both within the Aspinet control, making a total of 114 for the band in 1674.

There was a marked difference between the disposition of the natives of the Cape and neighboring

¹ Stiles (1762?) quoted in article *Manamoyik* in *Handbook of American Indians*, pt. 1, 1907.

islands on one hand and those of the mainland on the other. While King Philip's war raged, the Nauset and the Marthas Vineyard tribes not only remained peaceful and friendly, but actually coöperated at times by individual service which was not a little valuable to the English. The autonomy of these bands has already been discussed from the ethnic point of consideration.

When dealing solely with the larger social units forming the constituency of some local chief, as we have been doing, we miss the satisfaction of know-

ing how the smaller family groups were adjusted and how they were distributed in the area inhabited by the band. The more detailed knowledge of this nature is of course only possible in the case of the better preserved tribes whose culture is more



FIG. 77.—Mrs. Horatio Amos, Mashpee, with native pack-basket.

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intact. Such Algonkian groups are now to be found only in the far north. Yet it is gratifying to be able to progress as far as we have been permitted to go in reconstructing the social groupings in a region so long removed from its aboriginal setting.

Regarding the desirable but irrecoverable facts of family relationship within the local band, one further remark may still be added from certain forthcoming data obtained from the inhabitants of Mashpee. Here, along the southern coast of the Cape, where extensive marshes and inlets afford place for excellent clam and oyster beds, are high and picturesque islands. Some of them contain but an acre or so of elevated land, others more. On most of them are attractive landing beaches, which are always marked by the evidence of native occupancy in the form of shell deposits, the remains of clam- and oyster-smoking operations of the Indian landowners. A specific instance to be referred to is that of Daniel Queppish, a former Mashpee family head, whose forefathers owned a certain island (figs. 66-68) now known at Mashpee as Daniel's island. Daniel was the grandfather of some of the Mashpee of today whose ages range from 55 upward. Daniel's parents had a wigwam on this island, and a planting ground around it. The island was sold to an outsider by Daniel. If this case is typical, then we may conceive how the neighboring islands, and in fact all those along the south shore of the Cape, were inhabited by families who had wig-

wams on them, with corn and bean gardens round-about, and where shellfish operations were carried on just above the landing beaches. Such a conception is



FIG. 78.—Mashpee mortar and stone pestle.

furthered by a general survey of the south shore and by the fact, remembered among the older Mashpee, that most of the islands, now covered over well with a thirty- or forty-foot growth of pitch pine, were in

their younger days unwooded on the high parts. Some of these islands have never been owned by white people and never built upon in the memory of living Indians. Why not, therefore, as suggested by Horatio Amos, one of Daniel Queppish's grandsons, imagine the local bands, as we have outlined them under their sachems, to have been composed of family units located on small island holdings when residing near salt water during the temperate part of the year, and on suitable sites in the interior in winter among the many ponds? These families, we infer, were unified by the consciousness of blood relationship and allegiance to a certain leading family in each case in which local chieftainship was hereditary in the male line. This reconstructive sketch conforms in general to the details which come to us in fragments pieced together out of time and space from various angles of research in southeastern New England. The result, moreover, is not in any direct disagreement with normal conditions so far as we know them among the more intact bands of northern and eastern Algonkians which have been studied up to the present time.

In our study we have accomplished the first step in clearing the way for a treatment of the culture and distribution problems of southern New England ethnology, by establishing group boundaries, ascertaining some political features, and identifying existing bodies of remnants whose inner life will next have to be studied in intimate detail for the rescuing of survivals of culture.

APPENDIX

THE PUNKAPOG BAND OF MASSACHUSETT

Of the seven Massachusetts and Nipmuck towns of "Praying Indians," so important in the history of American colonies, little now remains. At the most famous of them, Natick, the Eliot Bible, the first in America, was printed by Indian converts; and of several hundred inhabitants there is not an Indian there now and none recorded in this century, except for the mention of two families of 12 mixed individuals noted in the report on Indians (1861, p. 71) of the State of Massachusetts, as still lingering in the environs. The names of the two families were Blodgett and Jepherson. Crispus Attucks, however, the first man to fall in the Revolution, killed in the Concord fight, was a negro-Indian half-breed from Natick. He evidently carried his Indian father's name, Attucks, which means "deer" (diminutive).

Of the other "Praying towns" in Massachusetts, those inhabited by Nipmuck are gone almost without memory, except for one, Hassanamisco, near Dudley. But in the former territory of the Massachusetts there are still some vestiges of the "Praying town" of Punkapog. To find thus, within less than a dozen miles of New England's metropolis, individuals of marked Indian appearance and bearing, whose

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conscious tradition connects them with the native mission villages of the seventeenth century, might appeal to the average reader as either a piece of imagination or fraud. Nevertheless, a recent trip into the much-frequented woodland districts of the Blue Hills near Canton resulted in the rediscovery of a new-old group of the "Praying Indians," whose name even the ethnologist might be excused for not knowing. It was with such reflections in my mind that in October, 1921, I inquired my way through the peaceful wooded districts of the Neponset lowlands in the suburbs of Boston in search of some individuals, following the instructions of friends, representing the remainder of the Punkapog tribe. With the fresh recollections of a recent journey among the Montagnais and Naskapi of northern Canada for a background, I compared the oak-clad Blue Hills and the slow-moving Neponset river with the wind-swept tundra and boiling torrents of the Laurentians, wondering what impression would result when its native Algonkian representatives, if they could be found at all, were compared with the memory vision of the northern aborigines. When in due course I met Mrs. Chappelle, I saw an Indian woman, refined and educated, a dressmaker by trade, whose physical appearance and racial consciousness would have placed her on an easy and natural footing in almost any real Indian assemblage!

It is more than remarkable that any of the living descendants of these Massachusetts bands should

have been able to survive to the present time without such a fact of interest both to historian and ethnologist being known, it would seem, outside the limits of a small community. That such, however, is the case, is shown by the disclosure of some dozen individuals known as "the last of the Punkapog Indians" residing in the vicinity of Canton, Mattapan, and Mansfield, all within the radius of a few miles. Their central point, however, seems to have been a locality in Canton known as Indian Lane, near Glen Echo lake, formerly York pond. A few observations about this interesting place will show that here in all likelihood was a colonial-day settlement of the band. A number of hut-cellars and some remains of chimneys attest the location of their domiciles, and in a wood-lot not far back of some of the present Indian houses is a burial ground long known to the community, and betraying itself by some irregular stone slabs as headstones. From Indian Lane many of the Punkapog descendants have dispersed in the last generation, seeking employment abroad as farm life became more unprofitable—a condition which for some reason seems to have affected the New England population at large within the last twenty years or so.

From Mrs. Mary Chappelle, one of the Punkapog survivors (figs. 23, 24) and at present the one taking the most interest in the concerns of the tribe, some information was gleaned, fragmentary but with a magnified interest in view of its bearing.

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The present living representatives of the tribe, besides Mrs. Chappelle, whose husband was a man of Micmac blood from Prince Edward island, are: Mary E. Crowd and her son Arthur E. Crowd of Mansfield; John Crowd of Abington and four children; Alfred Crowd of Indian Lane, Canton, and children, Daniel, Chester, Lena, Olive. Among the family names which, within the memory of Mrs. Chappelle, have died out are Bancroft and Moho. There may have been some mixture between the Punkapog and Narragansett, because Mrs. Chappelle thought there was a Narragansett family named Bencroft at one time at Indian Lane. The family names given for the tribe by Earle in 1861 were Bancroft, Crowd, Robbins, Davis, Elisha, Lewis, Manuel, Mooney, Moore, Roby, Talbot, and Williams. Besides these were colored and foreign names married into the band as follows: Foster (Narragansett), Toney, Thomas, Steinburg, Smith, Jackson, Burr, Burrill (white), and Hunt.

Like the older people of most countryside communities, those of the Punkapog have a few personal anecdotes, their only heritage, it seems, from the store of legends of their ancestors. Mrs. Chappelle relates a few which I shall list in nearly her own words:

(a) There was one old Punkapog woman, who lived well into her 90's, and although she had lost her sight, she desired to travel once before she died, over the lands of her tribe. So in winter they

pulled her on a sled all over the old roads which she was able to identify, sightless though she was.

(b) One summer, long years ago, when the Indians used to live in the log huts, whose cellars are to be seen at Indian Lane, there was one old woman, Aunt Dinah Moho, who became terrified at the approaching blackness of a thunder-storm. For the sake of companionship she ran out of her house to the house of a neighbor, but dropped dead as she entered the doorway.

The name and pronunciation of Kitchamakin or Cutshamekin are still remembered. He is said in one account to have been the last native chief.¹

It seems that the native dialect died out some time before Mrs. Chappelle's mother's day. This old lady died in 1919 more than 90 years of age, yet she knew nothing of the Massachusetts language, and it is Mrs. Chappelle's impression that her mother had not even heard it spoken.

The use of corn mortars and stone pestles, basket-making, and even bead-working, are still remembered as realities by Mrs. Chappelle, and some specimens are still extant. An old man named Bencroft, of Indian Lane, who died years ago, used to make bows and arrows and peddle them about.

Although the present condition of this small tribe as a social unit is one of hopeless disintegration on account of the scattering of its members, some

¹ Cf. Huntoon, *History of Canton*; also *Dedham Historical Society Publications*, Dedham, Mass.

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considerable local interest has been developed on the subject among the cultured people of the neighborhood. Several appreciative and sympathetic newspaper accounts have appeared (for instance, *Boston Sunday Post*, October 9, 1921), and in local historical pageants Mrs. Chappelle has occasionally been induced to participate in Indian costume.

The principal and probably only time that the Punkapog have appeared in contemporaneous literature has been the account of the tribe in the report of 1861 of the State of Massachusetts on Indian affairs.¹ Here it is stated that the tribe comprised 103 natives and 14 foreigners married into the band. At that time the oldest members living were Rebeckah Davis, 71 years of age, and Mary Roby, 85. Only 31 of them resided on their lands at Canton. In a previous report, 1849, their numbers were underestimated by their commissioner, only 10 being reported, while in 1857 only 10 or 15 were said to remain.

¹ *Senate Papers* no. 96 (1861), p. 76.

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INDIAN NOTES AND MONOGRAPHS

EDITED BY F. W. HODGE

No.



45

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FROM SAN MIGUEL ISLAND,
CALIFORNIA

II. THE FORAMEN MAGNUM:
SHAPE, SIZE, CORRELATIONS

BY

BRUNO OETTEKING

NEW YORK
MUSEUM OF THE AMERICAN INDIAN
HEYE FOUNDATION

1928

THIS series of INDIAN NOTES AND MONOGRAPHS is devoted to the publication of the results of studies by members of the staff and by collaborators of the Museum of the American Indian, Heye Foundation, and is uniform with HISPANIC NOTES AND MONOGRAPHS, published by the Hispanic Society of America, with which organization this Museum is in cordial coöperation.

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BY BRUNO OETTEKING

1. INTRODUCTION

THE following study represents the second investigation of a series of skulls from San Miguel island, California, the more complete data of which may be found in the introduction to the author's first paper in this series on the Sutura Nasofrontalis.¹ The number of skulls examined in the present study comprise 67 males, 16 females, and 4 infants.

The factors which govern the shape and size of the foramen magnum, and its correlative position in the cranial complex, are the same as those which govern the development of any other detail in the human organism: physiologic demand (function, adaptation) and heredity. The factors of decisive importance in our case are (1) the marvelous growth of the brain in the course of mammalian evolution,

¹ *Indian Notes and Monographs*, vol. VII, no. 2, 1920.

and (2) in connection therewith the acquisition of the erect gait. It was shown by *Bolk* (1915) that the shifting or migration of the foramen magnum from a postero-occipital to an infero-occipital (basilar) location was due to the rapid expansion of the brain, whereas the modifications of shape and size of the foramen magnum are influenced by the erect gait which imposes increasingly changing demands on the statics and dynamics of the human head, as controlled by muscular action. Mutual interrelations prevailing in the skeleton in general must also be considered in this connection with regard to the cranial complex, and which give rise to correlations between the cranial parts.

So far as can be learned, a systematic investigation of such correlative factors does not appear to have been carried on. Conjectures, however, as to the mutual relation between the size of the foramen magnum and that of the entire cranium and stature are occasionally met in anthropological literature (*Hrdlička*, 1906, 54; 1907, 31; 1909, 195; 1916, 31-32; *Hooton*, 1920, 98, et al.).

2. PROBLEM

The present investigation concerns itself with the descriptive and metrical interpretation of the foramen magnum, in the following order: (1) shape, (2) size, (3) angular conditions, and (4) correlative conditions. These latter are enhanced by classificatory comparison of absolute and proportional

measurements of the foramen magnum with those of the cranium as a whole.

3. SHAPE OF FORAMEN MAGNUM

Owing to the general uncertainty of shape of the foramen magnum, it is rather difficult from the cranioscopic angle to describe or point out definite and unmistakable types in a given series. Its variableness may well be likened to that of the cranial form itself. While in this latter respect a number of individuals may be grouped around more primary or conservative types, a certain prevalence of shape may obtain also with regard to the foramen magnum. Such primary forms may be the elliptic and circular ones which, however, even if true to type, only rarely represent racial characters of diagnostic value. In this respect the modifications of the primary shapes are of far greater occurrence. *Hooton* (1920, 112) thus distinguishes in the Madisonville crania between irregular, half-diamond, round, diamond, and hexagonal, while the present author in the Jesup Report (1929) recognizes round and elliptic as fundamental shapes with modifications in the rhomboid, and in the oval with anteriorly or posteriorly situated bases. A racial prevalence may at times be encountered, as *Haberer* (1902, 87), for instance, claims of the Chinese when he says, "Das Foramen magnum ist gewöhnlich gross, rhombisch und hat rauhe dicke Ränder," or *Klaatsch* (1908, 127), of the Australians, stating that "the



FIG. 1.—The three prevalent shapes of foramen magnum in the San Miguel Island series = *a*, elliptic (314 ♀); *b*, circular (278 ♀); *c*, oval pointed anteriorly (257 ♂). Slightly reduced.

diameter of the foramen shows much variation, an oval shape being the prevailing rule," but mentioning also circular forms.

In the series under discussion the author has applied the distinction of shapes as described in the preceding paragraph without, however, accounting for the anteriorly pointed oval and the rhomboid, true instances of which were not available. Regarding the latter it should be mentioned that the projection of the occipital condyles into the lumen of the foramen magnum frequently causes the erroneous impression of a rhomboid foramen magnum which in fact it is not. It must furthermore be remembered that since true types are rather rare, their modifications are somewhat difficult to recognize, and their classification, therefore, is somewhat arbitrary. Thus, elliptic and oval shapes may be very similar, while both may be quite wide and show affinity to the circular shape.

Taking all these fallacies into consideration the following distinction was finally decided on: (1) elliptic, (2) circular, and (3) anteriorly pointed oval, which may be seen illustrated in fig. 1, *a-c*, after specimens in the series under discussion. Their distribution among our series is shown in Table I, where the percental participation of the different shapes is highest in the circular, slightly less in the elliptic, and still less, although at an appreciable figure of 21.7%, in the oval. The distribution among the sexes is quite interesting. Equal fre-

TABLE I. *Actual and Percental Frequency of Foramen Magnum Shapes*

Classes	Elliptic		Circular		Oval anteriorly pointed	
Total	31	37.3%	34	41.0%	18	21.7%
♂	26	83.9%	25	73.5%	15	83.3%
♀	5	16.1%	7	20.6%	3	16.7%
Inf.	—	—	2	5.9%	—	—

quencies of the elliptic and oval shapes occur in the males at 83% and in the females at 16%, while in the circular there is a relatively lesser frequency in the males and a higher one in the females. The two infants are also listed in the column headed circular.

Irregularities around the foramen magnum, such as the various "manifestations of the occipital vertebra" (*Kollmann, Bolk*),² or others resulting from pathological or mechanical causes, do not obtain in our series. There is, however, a variation in the posterior border of the foramen which deserves mention. In ontogenetic stages an independent bone, medially situated, is derived from a special ossification center in the cartilaginous matrix, *Hannover's* (1881) *membrana spinoso-occipitalis*. Normally this small bone in proper time, i.e. several years after birth, according to *Gegenbaur*

² See *Oetteking, Bruno*, 1923.

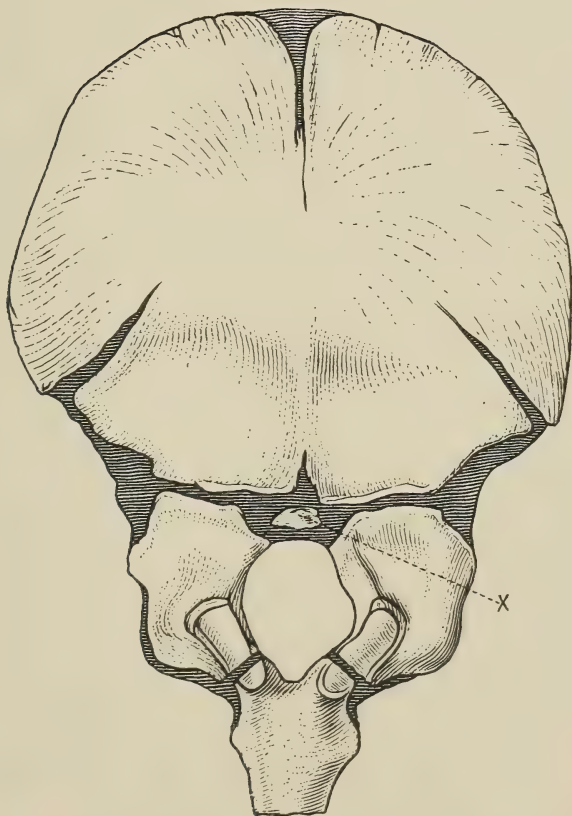


FIG. 2.—Anlage of an ossiculum *Kerckringii* (Topinard), x, in a fetal human os occipitale. (After Cunningham, D. J., Textbook of Anatomy, 1923, p. 196.)

in the sixth to seventh year, merges with the surrounding occipital parts. This osseous element is the ossiculum *Kerckringii* (*Topinard*), or manubrium squamæ occipitalis (*R. Virchow*), the anlage of which is shown in the fetal bone of fig. 2. In rare cases it does not merge, and this produces an emargination with more or less sharp edges which then causes an elongation of the foramen. Our series does not contain such cases; a number of them instead, however, show peculiar shapings of the opisthion region which bear evidence of individually variable ossification. They are easily definable as straight and more or less angularly set off against the lateral margins of the foramen magnum, or as concave or convex. In fig. 3, *a-c*, these variations are illustrated, *a* representing the normal condition of an even rounding, as in no. 314 ♀ of our series. A straight line, 10 mm. in length, forming mildly obtuse angles at both ends, may be noticed in *b*. It is an immature skull of the infant I stage, no. 267, the permanent molars not having erupted as yet. This is a particularly interesting case because of the fact that the two lateral sutures (fissures?) at each end of the straight line had not become obliterated, which corroborates *Gegenbaur's* statement, referred to above, of mergence of the ossiculum *Kerckringii* during childhood. A modification of fig. 3, *b*, is pictured in *c*, corresponding to no. 337 ♂ of our series, where the straight line that marks the medial posterior edge of the foramen magnum turns sharply



Slightly reduced.



FIG. 3.—Variation in the anomalous emargination of the posterior border of the foramen magnum. See text. Slightly reduced.

forward at right angles. These side lines again form more or less pronounced angles with the lateral margins of the foramen magnum. If the latter were connected with one another from side to side, a rectangle of only 3 mm. in depth and 10 mm. in width would result. The concave shape, as given in *d* of our figure, is that of no. 272 ♂; it represents a neatly shaped notch, while in *e*, no. 301, inf. II, where the medial portion bulges out and produces a convexity forward, this seems to be partly filled in again. Most of these shapes represent single occurrences in our series, and might be attributed directly to irregular ossification. A deficiency there of the independent osseous element hardly comes under consideration, since the notches are not deep enough to justify such an assumption. Nor on account of their scarcity can they be regarded as a racial trait, although *Klaatsch* (1908, 127 and plates) has repeatedly observed them in his Australian skulls, and *Cameron* (1923, 41c) in the Eskimo. But even in pronounced cases of absence of the ossiculum *Kerckringii*, such a condition must not be mistaken for knife-marks caused in maceration which at times occur somewhat regularly and which *Hrdlička* (1907, 91) mentions in discussing the Gilder Mound crania of Nebraska.

4. METRICAL DEFINITION OF FORAMEN MAGNUM

a. LENGTH

The physiological range of the length of the foramen magnum in our series is almost identical in the sexes, extending from 29–38 mm. in the males and from 29–37 mm. in the females, while the two immatures measure 31 mm. and 33 mm. This is fairly in accord with *Martin's* (1928, 851) statement of a total physiological range of (25 mm.) 30 mm. to 40 mm. (43 mm.) where the parenthesized figures represent the extreme values of a Bashkir and a Tyrolese in the order of the citation. The averages amounting to 33.6 mm. in the males, 32.8 mm. in the females, and 32.0 mm. in the immatures, although quite similar, exhibit nevertheless such differences as are generally met between the sexes, as well as between the mature and immature ages, i.e. the male values exceeding the female, and the latter the immatures. If compared with other human groups, the foramen magnum length in our series is rather small, as may be seen in Table II.³ The Japanese as well as the Australian averages exceed those of our series, and the La Chapelle-aux-Saints value of 46 mm. appears to be the highest on record.

³ Comparative data here as elsewhere are in most cases quoted from *Rud. Martin*, *Lehrbuch der Anthropologie* (1928).

TABLE II. *Comparative Averages of the Foramen Magnum Length*

Classes	Length of foramen magnum (averages)			
	San Miguel Island	Japanese	Australians	La Chapelle-aux-Saints
♂	33.6 mm. (67)	36.5 mm.	35.5 mm.	46 mm.
♀	32.8 mm. (16)	36.5 mm.	34.0 mm.	
Inf. . . .	32.0 mm. (2)	—	—	
Range.	29–38 mm. (85)	—	—	

b. WIDTH

The range of the foramen magnum width, like the length, comprises 10 units, extending from 24–33 mm., which at the same time represents our male range, the female extending from 24–31 mm., and that of the four infantiles from 26–28 mm. *Martin's* (1928, 851) general range comprises individual width values from (20 mm.) 23 mm. to 38 mm. where the parenthesized low extreme is that of a Roumanian. Our highest value of 33 mm. is thus seen to fall noticeably short of *Martin's* highest one. Our averages of 28.6 mm., 27.3 mm., and 27.0 mm. in the sexes and immatures, as listed in Table III, show a tendency toward smallness. The width averages manifest similar diversities to those found in the length averages. Comparison of these figures and those of the other human varieties quoted in Table II reveals similar proportions within each set of averages. It must be noted, however, that

the average of the foramen magnum width in the Japanese females at 26.5 mm., considering the smallness of the measurement, is markedly less than that of the Japanese males, as against the equality of their foramen magnum length measurements at 36.5 mm. The foramen magnum width of the La Chapelle-aux-Saints skull falls likewise considerably short of its excessive length, being thus rather comparable with the male width average of the Japanese, which in turn is slightly in excess of the width average of our own series.

TABLE III. *Comparative Averages of the Foramen Magnum Width*

Classes	Width of foramen magnum (averages)			
	San Miguel Island	Japanese	Australians	La Chapelle-aux-Saints
♂	28.6 mm. (67)	30.3 mm.	29.9 mm.	30 mm.
♀	27.3 mm. (16)	26.5 mm.	29.3 mm.	
Inf. . . .	27.0 mm. (14)	—	—	
Range.	24-33 mm. (87)	—	—	

c. LENGTH-WIDTH INDEX

The total range of the foramen magnum index is very extensive between the extreme values of 71.4 and 103.5, both being males. The female range between 72.7 and 93.1 is less extended, while the two infants have indices of 81.8 and 83.9. In correspondence with the length-width differences

within and between the sexes, the male average of 84.8 slightly exceeds the female of 83.2. This condition is much more marked in the Japanese of Table IV, whose considerably smaller female average

TABLE IV. *Comparative Averages of the Foramen Magnum Index*

Classes	Foramen magnum index			
	San Miguel Island	Japanese	Australians	La Chapelle-aux-Saints
♂	84.8 mm. (67)	83.4 mm.	84.9 mm.	65.2 mm.
♀	83.2 mm. (16)	72.6 mm.	86.1 mm.	
Inf. . . .	82.0 mm. (2)	—	—	
Range.	71.4— 103.5 mm. (85)	—	—	

is the result of the noticeably lesser female foramen magnum width as against the higher male width and the equality of the foramen magnum length in the Japanese sexes of Table II. The La Chapelle-aux-Saints index of 65.2 appears to be the smallest on record, owing to the excessive length and the relatively small width of this fossil's foramen magnum.⁴ From *Martin's* (1928, 851-852) figures it may be gathered that the physiologic range of the foramen magnum index, 71-111, is very extensive and comparable somewhat to the range of the series

⁴ See, however, Table XI (Eskimo) and accompanying text on page 34.

under discussion. The average of the latter when judged by *Martin's* list of racial averages occupies a submedium position, thus indicating a slight tendency toward a bilaterally narrowing circular form. They are exceeded toward the other extreme by a number of varieties like the Bavarians, Malays, Paltacalo Indians, and others. In the majority of cases the female average falls short of the male, which speaks for a rounder foramen magnum in the latter. The reverse is shown in the Australians of Table IV.

d. MODULE

Inasmuch as there is considerable irregularity and little special significance in the ratio between the two main diameters of the foramen magnum, *Hrdlička* (1916, 31-32), for comparative purposes, prefers the foramen magnum module according to the formula $\frac{\text{length} + \text{width}}{2}$. The sex differences here, of course, correspond to those of the index, i.e. there is a slight diminution in the female average. Thus, while the male average of the module amounts to 30.9, at a range from 27.0-35.0, the female average yields 29.7 at a slightly smaller range from 27.5-33.5. The two infants fall within the general range of variation with values of 28.5 and 30.0. The following table lists a few comparative data, where those of the other Indians are quoted from *Hrdlička* (1916, 32).

It will be noticed that the San Miguel Island

TABLE V. *Comparative Averages of the Foramen
Magnum Module*

Classes	Foramen magnum module			
	San Miguel Island	Arkansas	Munsee	La Chapelle- aux-Saints
♂	30.9 mm. (67)	33.0 mm. (22)	35.0 mm. (7)	38.0 mm.
♀	29.7 mm. (16)	31.0 mm. (16)	32.0 mm. (8)	
Inf. . . .	29.3 mm. (2)	—	—	
Range.	27.0–35.0 mm.		31.0– 38.0 mm. (15)	

averages are exceeded by the Arkansas and Munsee, and these again by the Chapelle-aux-Saints module of 38.0 mm. A module of the same height occurs in the Munsee range as listed in Table V.

e. ANGULAR RELATION TO EAR-EYE PLANE

The angle is formed by the basion-opisthion line representing the foramen magnum plane, and the ear-eye plane, or better, its parallel through the basion. Using *Broca's* terminology, the angle is positive (+), if situated above that parallel, and negative (–), if situated below it. Both angles open posteriorly. In fig. 4 these conditions are schematically illustrated. The positive angle, considered from a morphologic viewpoint, is a primitive condition found in Simiidæ where it ranges from

+ 55° (Cebus) to + 19° (Gorilla). More advanced conditions obtain in the extinct and recent varieties of *Homo*, while in the Hominidæ as shown in the La Chapelle-aux-Saints skull, the more primitive angle of + 7° occurs. However, instances of positive angles occur also in almost any human

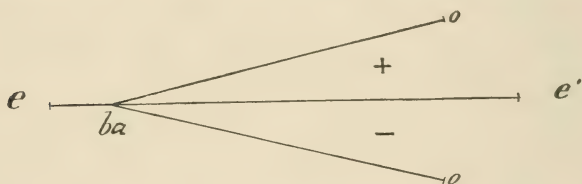


FIG. 4.—Schematic representation of the deviations of the foramen magnum plane from a parallel of the ear-eye plane ($e-e'$) passing through the basion. + angle above, - angle below, the parallel; ba , basion; o , opisthion.

variety, while the general behavior here is that of an advanced morphologic state as signified by the preponderance of the negative angle. In Europeans *Fr. Sarasin* (1916-1922, 195) states an average of - 12°, while in New Caledonians the males yielded an average of - 3°, the females of - 6.7°. Compared with these findings the San Miguel Island averages and those of the western Eskimo of Table VI range somewhat higher, falling in fact between the more primitive New Caledonians and the more advanced Europeans. One feature, however, is common, or at least preponderant, in all the varieties, i.e. the greater minus angle in the female

skulls which probably is due to the sex differences in general cranial structure.

In the present series only one instance of a positive angle has been met, the general range beginning at $+3^\circ$ and extending to -22° . The averages yield angles of -9.4° for the males and -13.2° for the females, and from whose range of -5° to -22° a higher average might have been anticipated. The two immatures have angles of -7° and -11° .

TABLE VI. *Comparative Averages of the Foramen Magnum Angle*

Classes	Foramen magnum angle		
	San Miguel Island	Eskimo ⁵ Alaska and Siberia	Chinook (deformed)
♂....	-9.4° (67)	-7.1° (32)	$+0.6^\circ$ (56)
♀....	-13.2° (14)	-9.8° (12)	-0.5° (24)
Inf....	-9.0° (2)	—	—
Range.	$+3^\circ$ to -22° (83)	$+2^\circ$ to -19° (44)	$+14^\circ$ to -15° (80)

It is of interest in this connection to compare the status of the foramen magnum angle in a deformed

⁵ The data of the last two columns of Table VI are from the present author's report, now in print, on the North Pacific crania of the Jesup Expedition. Regarding the Chinook findings, see also *Oetteking, Bruno* (1924), Declination of the Pars Basilaris in Normal and Artificially Deformed Skulls, *Ind. Notes Monogr.*, misc. 27.

group. Among the skulls mentioned in footnote 5, there is a series of 56 male, 24 female, 5 infantile, and 4 juvenile Chinook skulls. This tribe, as is known, practised excessive anteroposterior skull deformation which, besides causing considerable distortion in the configuration of the skull parts, brought about changes at the base of the skull. The total range of variation comprises angles from $+14^{\circ}$ to -15° , and it is quite significant that the infantile and juvenile ranges contain only plus values $+7^{\circ}$ to $+4^{\circ}$ in the former, and $+8^{\circ}$ to 0° in the latter, while the male and female ranges extending into the minus region amount to $+14^{\circ}$ to -15° in the former, and $+7^{\circ}$ to -10° in the latter. The averages accordingly aggregate $+0.6^{\circ}$ in the males, -0.5° in the females, $+5.2^{\circ}$ in the infantiles, and $+3.0^{\circ}$ in the juveniles.

5. CORRELATIONS

The morphological interpretation of so complex a unit as the human skull must needs rely, to its greater extent, on quantitative determinations. Diameters and their proportional relations expressed in percental indices, however, do not fully solve the problem: they disclose only insufficiently the interdependence of parts in the configurative sense. Thus, while quantitative determination must be the basis of all differential treatment, the interpretation of form may be greatly aided through the

examination of the correlations of parts that form the complex. Although different methods were applicable and suitable to our specific use, the counterposition of metrical findings was preferred, the problem thus treating of the correlation between the dimensions, shape, angular position of the foramen magnum, and certain cranial dimensions and proportions.

In the order of their importance the investigation of mutual relation was carried on, first, between absolute measurements of the foramen magnum and the cranium; secondly, between their proportional evaluations; thirdly, between the foramen magnum angle, and absolute foramen magnum and cranial measurements, and the proportional evaluations of the latter.

a. MUTUAL RELATION BETWEEN ABSOLUTE
CRANIAL AND FORAMEN MAGNUM
MEASUREMENTS

α. CRANIAL LENGTH AND FORAMEN MAGNUM
LENGTH

The averages of cranial length in the present series amount to 177.0 mm. and 170.1 mm. in the sexes, and 160.7 mm. in the infantiles. They show the usual sex difference, ranging rather low when compared to other racial averages given by *Martin* (1928, 765) with male and female ranges of 174 mm. (Bashkirs) to 187 mm. (Scotch), and 165 mm.

TABLE VII. *Correlation between the Cranial and Foramen Magnum Lengths (Frequencies, Averages, Ranges)*

Series	Length		
	Cases	Cranial	Foramen magnum
San Miguel Island	68	177.0 (168-193) mm.	33.6 (29-38) mm.
	16	170.1 (164-175) mm.	32.8 (29-37) mm.
	6	160.7 (155-166) mm.	32.0 (31, 33) mm.
Eskimo (West) ⁷	33	181.9 (167-192) mm.	37.1 (33-44) mm.
	12	173.2 (166-179) mm.	35.5 (33-40) mm.
La Chapelle-aux-Saints.....		208 mm.	46 mm.

⁶ Inconsistencies here and farther on in the number of cases in each of the correlated measurements, 68 against 67 male and 6 against 2 infantile cases in the two measurements of Table VII, are naturally due to the feasibility of the latter being taken.

⁷ See footnote 5.

(Telengets) to 179 mm. (Scotch) respectively. In Table VII the length averages of the cranium and the foramen magnum of our own series are contrasted with those of another group and a neanderthaloid specimen.

From this tabulation it appears that an increasing cranial length as represented by the sex averages is associated with an increasing foramen magnum length, a fact which is evident in our own series as well as in the Eskimo and the human fossil listed there. As to the differential correlation between the two diameters under investigation within our series, the cranial length as shown in Table VIII was divided into three classes, containing the individual values from 164–169 mm., 170–179 mm., and 180–189 mm., and the foramen magnum length computed for each of these classes. The infants, on account of their small number, have not been listed in the tables, but are mentioned in each case in the discussion.

In the males, the foramen magnum length for the division of smallest cranial length with 34.8 mm. slightly exceeds that for the medium class with an average of 33.0 mm., only to increase again to 34.7 mm. with the class of greatest cranial length. It is quite possible that the disparity of successive increase in the male averages is due to the small number of cases in the class of lowest cranial length. The fact, however, that high individual values occur there cannot be disputed. In the females whose

TABLE VIII. *Correlation between the Cranial and Foramen Magnum Lengths, Classified (San Miguel Island)*

Cranial length (classified)	Length of foramen magnum					
	♂			♀		
	Cases	Average	Range	Cases	Average	Range
164-169 mm. . . .	4	34.8 mm.	32-37 mm.	6	32.0 mm.	29-36 mm.
170-179 mm. . . .	41	33.0 mm.	29-38 mm.	10	33.2 mm.	33-37 mm.
180-189 mm. . . .	22	34.7 mm.	31-37 mm.	—	—	—

averages comprise only the first two classes, the smaller cranial length combines itself with the lower average of the foramen magnum length, while the medium class shows an increase over the two. Two infantile skulls with foramen magnum lengths of 31 mm. and 33 mm., as specified in Table VII, have smaller cranial lengths of 161 mm. and 166 mm., which establishes the expected correlation between the two measurements. Some significance, however, seems to attach to the ranges of the foramen magnum length classes as correlated with those of the cranial length. Thus, while the female ranges show an even increase, the male ranges are per-

fectly irregular, which may be due in part to the small number of cases in the class of shortest cranial lengths, as pointed out above.

β. CRANIAL BREADTH AND FORAMEN MAGNUM WIDTH

The two breadth measurements, the cranial and that of the foramen magnum, have been treated in the same way as the respective lengths in the preceding section. In Table IX both measurements are contrasted.

On the basis of *Martin's* (1928, 766) list where the male averages for the cranial breadth range from 128 mm. (Vedda) to 153 mm. (Buriats), and the female from 124 mm. (Vedda, Paltacalo Indians) to 145 mm. (Swiss [Wallis], Telengets), showing the usual sex differences, the San Miguel averages as recorded in Table IX must be characterized as rather submediun. There are also among the individual values, if compared with *Martin's* physical range of from 101–173 mm., only few above medium conditions. The La Chapelle-aux-Saints skull, quite in proportion with its inordinate length, is seen to exceed in cranial breadth any of the San Miguel and Eskimo specimens, while the latter exceed the San Miguel skulls by only a trifle. As regards the foramen magnum width of the La Chapelle-aux-Saints skull, this falls, with 30 mm., about half-way between the extreme values of the Eskimo male range, a relation which will be of significance in the

TABLE IX. *Correlation between the Cranial Breadth and Foramen Magnum Width (Frequencies, Averages, Ranges)*

Series	Cases	Cranial breadth	Cases	Foramen magnum width
San Miguel Island				
♂.....	68	139.7 (130-151) mm.	67	28.6 (24-33) mm.
♀.....	16	135.3 (130-140) mm.	16	27.3 (24-31) mm.
Inf.....	6	132.7 (129-138) mm.	4	27.0 (26-28) mm.
Eskimo (West)				
♂.....	33	140.0 (130-150) mm.	33	29.3 (27-33) mm.
♀.....	12	136.1 (130-142) mm.	11	28.6 (26-32) mm.
La Chapelle-aux-Saints.....		156 mm.		30 mm.

length-breadth and length-width indices treated in the following section.

Comparable to the length measurements of the San Miguel Island skulls, those of the cranial breadth and the foramen magnum width show similar correlations. There is in the two groups of Table IX an increase of the foramen magnum width observable along with the increase of the cranial breadth. If, however, the cranial breadth is divided into successive small groups, to which the foramen mag-

num width is brought in proportion, such a correlation becomes less evident, as is shown in Table X. Here the range of the cranial breadth is divided into four classes and the foramen magnum widths correlated with each of them.

As is the case in the length measurements, in the females there is to be noticed an increase in the two successive classes with averages of 26.8 mm. and 27.9 mm., which is likewise obvious in the two ranges, 24-28 mm. against 26-30 mm. Such an increase is less clear in the males, each of whose four class averages amounts to

TABLE X. *Correlation between the Cranial Breadth and the Foramen Magnum Width, Classified (San Miguel Island)*

Cranial breadth (classified)	Width of foramen magnum					
	♂			♀		
	Cases	Average	Range	Cases	Average	Range
130-135 mm.	14	28.5 mm.	24-33 mm.	8	26.8 mm.	24-28 mm.
136-140 mm.	25	28.6 mm.	24-32 mm.	8	27.9 mm.	26-30 mm.
141-145 mm.	23	28.6 mm.	25-33 mm.	—	—	—
146-151 mm.	5	28.8 mm.	28-31 mm.	—	—	—

28 mm. and fractions, and it is only by the latter and by the ranges of the four classes that an increase, however slight, may be realized. Four infantiles with cranial breadths between 129-138 mm. have also small foramen magnum widths of an increasing order from 26-28 mm.

b. MUTUAL RELATION BETWEEN PROPORTIONAL EVALUATIONS

α. CRANIAL LENGTH-BREADTH INDEX AND FORAMEN MAGNUM INDEX

The averages of the cranial length-breadth index show the typical increase in the order males, females and infantiles, and, with the exception of the latter who are brachycranial, fall into the mesocranial class. This is also true of the Eskimo included in Table XI. In the San Miguel skulls the averages of the foramen magnum index when compared with those of the cranium show a gradual decrease as against the increasing cranial averages. These conditions, however, are reversed in the Eskimo in such a way that with the increase of sex averages the foramen magnum index likewise increases. This being also the case with the Australians of Table IV, it may be assumed that the proportions between the averages of the foramen magnum index in the various groups of mankind vary as to sex. The

TABLE XI. *Correlation between the Cranial Length-breadth and the Foramen Magnum Index (Frequencies, Averages, Ranges)*

Series	Length-breadth (width) index			
	Cases	Cranial	Cases	Foramen magnum
San Miguel Island	67	78.4 (71.9-83.9) mm.	67	84.8 (71.4-103.5) mm.
	16	79.2 (77.0-83.3) mm.	16	83.2 (72.7-93.1) mm.
	6	82.3 (80.1-85.3) mm.	2	82.0 (81.8, 83.9) mm.
Eskimo (West)	33	77.0 (71.0-81.7) mm.	32	78.7 (62.8-91.2) mm.
	12	79.0 (74.4-83.3) mm.	11	80.4 (70.3-91.4) mm.
La Chapelle-aux-Saints	75.0			65.2

TABLE XII. *Correlation between the Cranial Length-breadth and the Foramen Magnum Index, Classified (San Miguel Island)*

Cranial length-breadth index (classified)	Foramen magnum index					
	♂			♀		
	Cases	Average	Range	Cases	Average	Range
71.9-74.9 mm.	5	79.8 mm.	77.8-83.3 mm.	—	—	—
75.0-79.9 mm.	39	84.8 mm.	75.0-97.1 mm.	10	79.4 mm.	72.7-86.1 mm.
80.0-84.2 mm.	23	85.8 mm.	71.4-103.5 mm.	6	89.5 mm.	84.9-93.1 mm.

lowest foramen magnum index of 65.2 of Table XI (La Chapelle-aux-Saints), to which reference was made on page 19, is exceeded by the still lower male value of 62.8 in our Eskimo group and which is naturally an extraneous case, the next higher being 73.0 in the same range.

The comparison of the foramen magnum and cranial length-breadth indices in our series within definite subdivisions of the latter, as shown in Table XII, reveals the fact of a gradual increase in the averages of those subdivisions in the sexes. This is in contrast to the general behavior of the sex averages as pointed out in the preceding paragraph.

β. CRANIAL
AND FORAMEN
MAGNUM MOD-
ULES

Both modules depend entirely upon the cranial dimensions in general and represent as such synthetic size expressions, varying naturally in the sexes in such a way that the male averages exceed the female, and these in turn the infantile. This is likewise the case with the foramen magnum modules as shown in Table XIII. On account of their greater cranial dimensions, the

TABLE XIII. *Correlation between the Cranial and Foramen Magnum Modules*

Series	Module		
	Cases	Cranial	Cases
San Miguel Island	67	148.0 (141.0-156.3) mm.	67
	16	142.3 (138.0-147.0) mm.	16
	2	138.0 (134.7, 142.7) mm.	2
Eskimo (West)	32	152.3 (143.3-162.0) mm.	32
	11	146.9 (144.3-150.0) mm.	11
La Chapelle-aux-Saints.		165.0	38.0

TABLE XIV. *Correlation between the Cranial and Foramen Magnum Modules, Classified (San Miguel Island)*

Cranial module (classified)	Foramen magnum module					
	♂			♀		
	Cases	Average	Range	Cases	Average	Range
138.0-144.7 mm.	15	30.5 mm.	27.0-34.0 mm.	13	29.4 mm.	27.5-33.5 mm.
145.7-150.7 mm.	34	30.7 mm.	28.0-35.0 mm.	3	31.0 mm.	29.5-33.0 mm.
151.7-156.3 mm.	18	31.4 mm.	29.5-33.0 mm.	—	—	—

Eskimo of the same table yield higher cranial modules to which the foramen magnum modules are in proportion. The highest values of our table, of which only the foramen magnum module of 38.0 is doubled in the Eskimo female range, are those of the La Chapelle-aux-Saints fossil whose cranial measurements, at least the length and breadth, were found to exceed by far the averages and ranges of the other groups of our tables,⁸ this holding true also of the foramen magnum length. The high foramen magnum module of the La Chapelle-aux-Saints skull is ac-

⁸ For the cranial height *Boule* gives 131 mm., a value falling well within the San Miguel and Eskimo series.

counted for by the length rather than by the foramen magnum width.

In the correlation scheme of Table XIV it is made manifest that in the males as well as in the females of the San Miguel Island series the averages of the foramen magnum modules increase proportionately in the successive classes of the cranial module.

c. MUTUAL RELATION BETWEEN THE FORAMEN MAGNUM ANGLE AND ABSOLUTE AND PROPORTIONAL FORAMEN MAGNUM AND CRANIAL EVALUATIONS

α . ANGLE AND LENGTH OF THE FORAMEN MAGNUM

From Table VI it was gathered that the sex averages for the foramen magnum angle differed in such a way that the female average yielded the higher figure, i.e. higher minus value, thus representing a more advanced morphologic condition. This held true not only for the San Miguel Island series, but also for the Eskimo of the same table, and it may be inferred that this is quite probably the general behavior in the human groups.⁹

⁹ From the physeotypical viewpoint one may be led to assume that the tendency toward greater female short-headedness in the comparative sense as a response probably to the less extensive backward and the more intensive lateral and downward expansion of the brain (*Bolk*, 1915), influences the orientation of the foramen magnum plane in such a way as to force the opisthion region downward, as against the more conservative basion region, which then would account for the greater minus angle of the foramen magnum plane.

TABLE XV. *Correlation between the Angle and the Length of the Foramen Magnum (Frequencies, Averages, Ranges)*

Series	Foramen magnum		
	Cases	Length	Angle
San Miguel Island	67	33.6 (29-38) mm.	-9.4° (+3 to -21)
	16	32.8 (29-37) mm.	-13.2° (-5 to -22)
	2	32.0 (31; 33) mm.	-9.0° (-7; -11)
Eskimo (West)	32	37.1 (33-44) mm.	-7.1° (+2 to -19)
	11	35.5 (33-40) mm.	-9.8° (-4 to -20)
La Chapelle-aux-Saints .		46 mm.	+ 7°

The combination in Table XV of the sex averages of the foramen magnum length and angle demonstrates, from the purely metrical viewpoint, that the smaller female average of 32.8 mm. is correlated with the larger average of -13.2° , as against the male averages of 33.6 mm. and -9.4° . Analogous proportions, but with comparatively higher length averages and smaller angle averages, obtain in the Eskimo, while an exaggeration of these proportions is shown by the La Chappelle-aux-Saints values.

The general trend of these proportional conditions may be seen corroborated in Table XVI, in which in the males as well as in the females the averages

TABLE XVI. *Correlation between the Angle and the Length of the Foramen Magnum, Classified (San Miguel Island)*

Foramen magnum length (classified)	Foramen magnum angle					
	σ			ϕ		
	Cases	Average	Range	Cases	Average	Range
29-30 mm...	6	-11.5°	-4° to -20°	3	-18.0°	-13° to -22°
31-35 mm...	47	-9.8°	-3° to -21°	8	-12.8°	-6° to -19°
36-38 mm...	14	-6.9°	-3° to -8°	3	-10.0°	-5° to -14°

TABLE XVII. *Correlation between the Angle and the Index of the Foramen Magnum (Frequencies, Averages, Ranges)*

Series	Foramen magnum			
	Cases	Index	Cases	Angle
San Miguel Island	67	84.8 (71.4-103.5)	67	-9.4° (+3 to -21)
	16	83.2 (72.7-93.1)	14	-13.2° (-5 to -22)
	2	82.0 (81.8; 83.9)	2	-9.0° (-7; -11)
Eskimo (West)	32	78.7 (62.8-91.2)	32	-7.1° (+2 to -19)
	11	80.4 (70.3-91.4)	12	-9.8° (-4 to -20)
La Chapelle-aux-Saints.		65.2		+7°

of the foramen magnum angle decrease with the increasing classification of the foramen magnum length.

β. ANGLE AND INDEX OF THE FORAMEN MAGNUM

The averages of the foramen magnum index, as specified in Table XVII, decreasing in the San Miguel Island series from 84.8 to 83.2 in the sexes, yield increasing averages of the foramen magnum angle of -9.4° and -13.2°

respectively; while the infants, numbering only two, with an index average below those of the sexes, come only to -9.0° , a condition doubtless due to their undeveloped physical state. The different order of indices in the Eskimo, i.e. 78.7 in the males, increasing to 80.4 in the females, as previously pointed out (page 32), shows nevertheless increasing averages of the angle, -7.1° and -9.8° , indicating that the order of sex averages of the foramen magnum angle, i.e. increasing from male to female, is rather a stable one and, at least so far as the two human varieties of Table

TABLE XVIII. *Correlation between the Angle and the Index of the Foramen Magnum, Classified (San Miguel Island)*

Foramen magnum index	Foramen magnum angle					
	σ			η		
	Cases	Average	Range	Cases	Average	Range
71.4-80.7	20	-7.3°	0° to -16°	4	-8.3°	-5° to -12°
81.3-90.6	36	-9.7°	$+3^{\circ}$ to -20°	9	-14.4°	-8° to -19°
91.2-103.5	11	-12.0°	-3° to -21°	1	-22.0°	—

XVII are concerned, is independent of the behavior of the foramen magnum index averages of the sexes.

While this is probably the general behavior in any series of human skulls, the distinctly increasing order of the angle averages in both sexes for the increasing classes of the foramen magnum index, as shown in Table XVIII, is quite interesting.

γ. FORAMEN MAGNUM ANGLE AND CRANIAL LENGTH

It is shown in Table XIX that the averages for the cranial length, decreasing naturally in the sexes and immatures, are correlated with increasing averages of the foramen magnum angle so far as the sexes are concerned.¹⁰ The angle of the immatures, on the other hand, decreases again and with 9.0° falls even slightly below the average of the males. As previously mentioned, this latter condition must be attributed to the undeveloped state of the infantile cranium.

The Eskimo of the same table present analogous successive differences in the average expressions. The slightly higher averages of the cranial length are correlated with somewhat lower averages of the foramen magnum angle. This proportion is carried to excess in the La Chapelle-aux-Saints skull, whose inordinate length of 208 mm. combines itself with a

¹⁰ See footnote 9.

TABLE XIX. *Correlation between the Foramen Magnum Angle and the Cranial Length (Frequencies, Averages, Ranges)*

Series	Cases	Cranial length	Cases	Foramen magnum angle
San Miguel Island				
♂.....	68	177.0 (168-193) mm.	67	-9.4° (+3 to -21)
♀.....	16	170.1 (164-175) mm.	14	-13.2° (-5 to -22)
Inf.....	6	160.7 (155-166) mm.	2	-9.0° (-7, -11)
Eskimo (West)				
♂.....	33	181.9 (167-192) mm.	32	-7.1° (+2 to -19)
♀.....	12	173.2 (166-179) mm.	12	-9.8° (-4 to -20)
La Chapelle-aux-Saints		208 mm.		+7°

TABLE XX. *Correlation between the Foramen Magnum Angle and the Cranial Length, Classified (San Miguel Island)*

Cranial length (classified)	Foramen magnum angle					
	♂			♀		
	Cases	Average	Range	Cases	Average	Range
161-169 mm....	4	-10.3°	-5° to -18°	6	-14.6°	-6° to -22°
170-179 mm....	41	-9.9°	+3° to -21°	8	-12.3°	-5° to -19°
180-193 mm....	22	-8.5°	-1° to -20°	—	—	—

foramen magnum angle of even + 7°, which is, of course, of phylogenetic significance.

The correlation between the foramen magnum angle and the cranial length, i.e. the gradual decrease of the angle averages in the successive classes of the cranial length, is analogous to the foramen magnum length and angle as specified in Table XVI. This is demonstrated in Table XX and is evident in both the males and the females.

δ. FORAMEN MAGNUM ANGLE AND CRANIAL LENGTH-BREADTH INDEX

The tendency toward relative shortheadedness of the females as against the males of a

given group is also borne out in the San Miguel Island crania and the Eskimo of Table XXI. The increasing sex averages of the cranial length-breadth index indicating those conditions are prompted there by the increasing averages of the foramen magnum angle, with the difference, however, as pointed out before, that the Eskimo present, with regard to the angle, a less advanced condition. The cranial length-breadth proportion, on the other hand, is fairly uniform in both varieties, with the exception perhaps that the Eskimo

TABLE XXI. *Correlation between the Foramen Magnum Angle and Cranial Length-breadth Index (Frequencies, Averages, Ranges)*

Series	Cases	Cranial L-Br Index	Cases	Foramen magnum angle
San Miguel Island				
♂	67	78.4 (71.9-83.9)	67	-9.4° (+3 to -21)
♀	16	79.2 (77.0-83.3)	14	-13.2° (-5 to -22)
Inf.....	6	82.3 (80.1-85.3)	2	-9.0° (-7; -11)
Eskimo (West)				
♂	33	77.0 (71.0-81.7)	32	-7.1° (+2 to -19)
♀	12	79.0 (74.0-83.3)	12	-9.8° (-4 to -20)
La Chapelle-aux-Saints		75.0		+7°

TABLE XXII. *Correlation between the Foramen Magnum Angle and the Cranial Length-breadth Index, Classified (San Miguel Island)*

Cranial L-Br index (classified)	Foramen magnum angle					
	♂			♀		
	Cases	Average	Range	Cases	Average	Range
71.9-74.9	6	-7.8°	-2° to -14°	—	—	—
75.0-79.9	39	-9.1°	+3° to -21°	9	-11.0°	-5° to -19°
80.0-84.2	22	-10.3°	-1° to -20°	5	-17.2°	-13° to -22°

males appear to be slightly less mesocranial.

The comparatively low index of 75.0 of the La Chapelle-aux-Saints cranium has also the least specialized angle of +7°, the morphologic significance of which, however, lies with the difference in species.

The metrical correlations in the sexes are repeated by the classified index-angle correlations in each of them. It is shown in Table XXII that with the increasing length-breadth index classes, the sizes of the foramen magnum angles also steadily increase. The more advanced conditions in this respect are shown in the female cranium, not only by higher

angle averages for the same classes of the cranial length-breadth index, but also by the fact that in the lowest index class there is no female representative, this being, however, fundamentally a question of cranial length-breadth proportion in the females of our series.¹¹

6. CONCLUSION AND SUMMARY

The preceding study concerns itself with the morphologic, metric, and correlative conditions of the foramen magnum in the San Miguel Island series of crania in the collection of the Museum of the American Indian, Heye Foundation. Regarding its shape, the foramen magnum with most cranial series shares a certain indefiniteness which in the present series is signified by a slight predominance of the circular. The frequency of this shape, however, is approached by that of the elliptic, and, to a lesser degree, by the anteriorly pointed oval. The latter two when combined exceed the frequency of the former. Anomalous formations around the foramen magnum such as the "manifestations of the occipital vertebra" (*Kollmann*) do not occur. In a number of cases notch-like dilatations were observed, too unpronounced, however, to assume a missing ossiculum *Kerckringii*, but due nevertheless to irregular ossification (fig. 3, *b-c*).

¹¹ In respect to this see footnote 9.

The absolute length and width dimensions of the foramen magnum show in their average conditions the typical differences, more or less stressed, between the sexes and between these, i.e. the matures and the immatures, in a diminishing order according to the differences in physical size. The average expressions for the length and width are both markedly low and rise in comparison only slightly above the lowest values of a racial range of variation. The limited dimensions of the foramen magnum are likewise evidenced by its module which in consideration of the nature of the measurements ranges on the average distinctly below the tribal varieties of Table V.

The length-width index as a proportional expression of the two principal dimensions of the foramen magnum corroborates the results of the visual examination. Its average signifies a somewhat rounded foramen with a slight tendency to narrow from side to side, which is more noticeable in the females, and in the latter appears to be the rather general occurrence in the human varieties. Exceptions to this statement occur, while on the other hand the generally close approximation of the sex averages may show stronger divergences, as, for instance, in the Japanese and Paltacalo Indians with male and female averages of 83.4 and 72.6, and 88.0 and 79.5 respectively.

Investigation of the angular position of the foramen magnum plane in the cranial complex in relation

to the general plane of orientation, i.e. the ear-eye plane, reveals several interesting results. The average angularity is marked by unmistakable differences in the human varieties. The San Miguel averages, for instance, when compared with *Fr. Sarasin's* European average of -12° , almost equal it, while the Eskimo fall distinctly lower, as do in turn the New Caledonians and the human fossil. If this signifies racial characteristics, these are still further emphasized by the marked sex differences in each case which yield the higher averages to the females. The cause for this remarkable distinction, as suggested in footnote 9, must be attributed quite probably to sex differences of physical growth and type which primarily govern all and every physical formation and which, in this specific case of the brain, influence commensurably the form of the skull; this may, in consequence, result in the increased declination of the foramen magnum plane. Quantitatively expressible, this distinction stands out quite clearly, while physiologically no satisfactory explanation can yet be offered.

The systematic investigation of the mutual or correlative relations between certain cranial and foramen magnum measurements and proportions results in a number of interesting observations. The investigation was carried on in such a way that the sex averages of a special measurement, as well as the averages derived from its suitably divided range of variation, were placed in contrast to the sex

averages of another measurement to which they were to be compared, and to those averages of the latter as checked with the divisions or classes of the first measurement. This is shown in the subjoined table of correlations.

Definite correlations, holding good for both the sex and class averages, could be established between the principal dimensions of both the cranium and the foramen magnum to the extent that the increasing cranial length and breadth were correlated with increasing length and width of the foramen magnum and naturally for the modules implicating the additional cranial height measurement in the cranial module. The same gradual increase was observed in the divisional correlations as based on the classes of the cranial length-breadth index, but not with regard to the sex averages which, increasing in the order male-female, encountered decreasing foramen magnum sex averages in the San Miguel Island skulls, while, for instance, in the Western Eskimo and Australians, the first, i.e. increasing order, was retained. This condition is reëncountered in the combination with the foramen magnum angle where the foramen magnum index is used as a base. The conflicting order of graduation of sex averages in the latter, i.e. either increasing or decreasing in the human varieties, as pointed out in the preceding sentence, is correlated, however, under both these conditions with only increasing averages of the angle. The increasing class averages of the foramen magnum

*Table of Mutual
Metrical Quantities
Measurements, in
Various Tables.*

Classification	
Sexes.....	C
Classes.....	C
Sexes.....	C
Classes.....	C
Sexes.....	C
Classes.....	C
Sexes.....	C
Classes.....	F
Sexes.....	F
Classes.....	C
Sexes.....	C
Classes.....	C
Sexes.....	C
Classes.....	C

Table of Mutual Relations (Correlations) between Average Foramen Magnum and Cranial Metrical Quantities in the Sexes and the Graded Divisions of Ranges of Variation of Basic Measurements, in Descriptive Terms. The Metrical Accounts may be Looked for in the Various Tables.

Classification	Correlated metrical quantities	
	Cranial length	Foramen magnum length
Sexes.....	Increasing	Increasing
Classes.....	Increasing	Increasing
	Cranial breadth	Foramen magnum width
Sexes.....	Increasing	Increasing
Classes.....	Increasing (only slightly)	Increasing
	Cranial L-Br index	Foramen magnum index
Sexes.....	Increasing	{ Decreasing (San Miguel Is.)
Classes.....	Increasing	{ Increasing (Western Eskimo, Australians)
		Increasing
	Cranial module	Foramen magnum module
Sexes.....	Increasing	Increasing
Classes.....	Increasing	Increasing
	Foramen magnum length	Foramen magnum angle
Sexes.....	Decreasing	Increasing
Classes.....	Increasing	Decreasing
	Foramen magnum index	Foramen magnum angle
Sexes.....	Decreasing	Increasing
	Increasing } see third item above	
Classes.....		Increasing
	Cranial length	Foramen magnum angle
Sexes.....	Decreasing	Increasing
Classes.....	Increasing	Decreasing
	Cranial L-Br index	Foramen magnum angle
Sexes.....	Increasing	Increasing
Classes.....	Increasing	Increasing

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index, on the other hand, are prompted by increasing averages of the angle. Identical results were observed in the combinations of the cranial and foramen magnum lengths with the foramen magnum angle in such a way that with the decreasing length averages in the sexes in the order male-female, the averages of the angle increased while the increasing class averages were correlated with decreasing averages of the angle. There is another phenomenon implicated in this, namely, the higher foramen magnum angle in the female skull, i.e. its greater minus angle (page 23, Table VI) as correlated with the smaller absolute cranial and foramen magnum lengths, and vice versa. The proportions, however, between the cranial length-breadth index and the foramen magnum angle show an even progression in the sexes as well as in the classes.

The infantile values, although recorded in the tables, naturally have no significance from the viewpoint of systematic comparison. Of greater import are the findings upon the human fossil (La Chapelle-aux-Saints) which with its larger dimensions combines morphologically inferior traits of the foramen magnum, particularly with regard to the excessive length of the latter and to its markedly low foramen magnum angle ($+ 7^\circ$) of phylogenetic significance.

The investigations carried on in the study of the foramen magnum of the San Miguel Island skulls give rise to the following summarization:

1. The shape of the foramen magnum is roundish.
2. Its size is submedium to small, with the typical sex difference according to physical size.

3. The somewhat smaller average of the length-width index indicates in the females a slightly narrower foramen magnum as compared with that of the males. This condition is shown to vary in the human varieties.

4. The greater degree of minus declination of the foramen magnum plane in the female crania, also in other human groups, signifies a more advanced morphologic condition.

Size and type differences in the brain, regarding which no studies have as yet been made, are doubtless causative for the varying conditions of cranial morphology in the sexes.

5. The study of mutual relations between different measurements reveals the following correlations:

- a.* Simultaneous increase in absolute cranial and foramen magnum measurements.
- b.* Varying behavior between the sex averages of the cranial L-Br index and the foramen magnum index, i.e. increasing-decreasing in the San Miguel Island skulls, but simultaneously increasing in a number of other human varieties. A simultaneous increase, however, is the distinguishing mark of the class correlation between the indices in question.
- c.* Foramen magnum and cranial lengths are correlated with the foramen magnum angle in such a way that with the decrease in the sex

averages of the former, increasing averages of the angle are observed, while in corroboration the increasing averages of the subdivided ranges of the former are prompted by the decreasing averages of angularity.

- d. The foramen magnum index, varying in regard to the graduation of sex averages in various human groups, is correlated with invariably increasing sex averages of the angle; but simultaneous increase of averages obtains in the classified averages of both categories.
- e. Simultaneous increase of sex as well as class averages was observed between the cranial L-Br index and the foramen magnum angle.¹²

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¹² Experiment with a number of other more or less closely related measurements of the cranium to those of the foramen magnum not recorded here, revealed similarly identical correlations.

Higher mathematical differential methods (coëfficient of correlation) were not resorted to on account of the relatively small series of specimens under investigation.

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46

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THE concept of individual or family ownership of land has been recognized for some time as a characteristic feature of the social organization of the native bands of northeastern North America. Investigations which have been carried on in this region have confirmed the presence of family hunting territories, as they are called, throughout the area north of the St. Lawrence river between the Ottawa basin and James bay on the west, and the Atlantic ocean on the east: and south of the St. Lawrence, in the Maritime provinces and Newfoundland, in New England, and, in aboriginal times, in the coastal country of the Middle Atlantic states. Although the data which we have are not sufficient to demonstrate a contiguity in distribution throughout the great area mentioned, it seems reasonable to suppose that such was the case.

The family hunting territory system, as it is noticed in the regions described, has been found to be characterized in general by the following factors:

6 HUNTING TERRITORIES

1. A concept of land ownership by the individual male family head.
2. The inheritance of each district, in whole or in part, from father to son, in cases of normal procedure.
3. The recognition of definite boundaries marked by the natural features of the terrain.
4. Patrilocal residence.
5. A prohibition of trespass.

Just how far to the north and west the characteristics of the family hunting group will be found in a similar order cannot be estimated at the present time. The land-tenure system of the bands in the far north is entirely unknown. Among the latter, however, it appears logical to suspect that there may be some wide divergences from the typical family hunting institution of their southern neighbors. Barren tundra conditions commence in their locality and gradually increase in intensity as Ungava is approached. Hunting itself takes on a different aspect, for the caribou in large herds roam throughout this region. In the past it seems that these animals penetrated much farther to the south than at present. I have been told by the Têtes de Boule that in former times the caribou were quite plentiful in their country, but it has now been several years since one has been killed there. In general, in the more northerly country life is much more severe and the game supply therefore correspondingly smaller. As a consequence the area

necessary to provide sustenance for a family must be proportionately greater. In view of these circumstances it would not be surprising to find a gradual lessening in the intensity of the typical family hunting territory institution the farther one goes to the north. Such a condition is apparent in the far northeast, in the region of Lake Mitchikamau.¹ There, the system of the small band of about six families which takes its name from that lake seems to be intermediate between the family hunting territory organization of the south and the system of the Labrador Eskimo, in which the family hunting districts are unknown.²

These people, after their trip to the trading post at Seven Islands on the St. Lawrence, return to their hunting area by way of the Moisie river. They make stops at Lake Ashuanipi and Lake Menihek, and hunt communally in those regions before returning to Lake Mitchikamau. Their country, which is an entirely open one (wooded areas appearing only here and there in small clumps), is reported to be sparsely populated with the usual fur-bearing animals and, as a result, trapping offers neither a large fur return nor an abundant food supply. The caribou, however, exist in great herds throughout their country and, as is well known, these animals are best hunted by the concerted

¹ Information from Dr. F. G. Speck.

² Hawkes, E. W., *The Labrador Eskimo, Memoir 91, Department of Mines, Ottawa, 1916, p. 25.*

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efforts of a group of hunters. After their great caribou drive, which lasts about a month, the families scatter until it is time to descend the Moisie on their annual trip to the post. While thus dispersed, each family hunts by itself, but it is not known whether the families select the same general districts respectively each year or whether they have any conscious regard for definite family lands. It may be, perhaps, that, except for caribou hunting, the same system that is found in the south is present, but this, of course, is only a surmise. For this region we can hardly expect to find the family hunting territory system in an intense form, if at all.

For the region west and southwest of James bay no specific studies to determine the land-tenure system have been made, although it is known that family hunting territories are to be found throughout a great part of this area. Dr. Cooper¹ has confirmed their presence among the bands immediately southwest of James bay, and Skinner,² for the Northern Saulteaux, gives us a brief summary of what upon a more intensive investigation may prove to be the typical family hunting institution. We also have a report of this land-tenure system by Harmon, who visited this general region as early as 1800. He applies his remarks to about fifteen northern tribes, including the Cree, "Sauteux," Muscagoes, Chipe-

¹ Information from Dr. J. M. Cooper.

² Skinner, A. B., Notes on the Eastern Cree and Northern Saulteaux, *Anthr. Papers Amer. Mus. Nat. Hist.*, ix, pt. 1, p. 150.

wyans, Beaver Indians, Sicannies, Tacullies, Nateotetains, Assiniboins, Carriers, and others.

Every tribe has its own particular tract of country; and this is divided again, among the several families, which compose the tribe. Rivers, lakes and mountains, serve them as boundaries; and the limits of the territory which belongs to each family are as well known to the tribe, as the lines which separate farms are, by the farmers, in the civilized world. . . . These people have nothing with which to purchase their necessities, excepting the skins of animals, which are valuable for their fur; and should they destroy all these animals in one season, they would cut off their means of subsistence. A prudent Indian, whose lands are not well stocked with animals, kills only what are absolutely necessary to produce such articles as he cannot well dispense with.¹

Although this information is of prime importance, giving as it does a description of the characteristic features of the family hunting lands as noticed in the east, it would seem that we should be quite skeptical in respect to its application to all of the tribes mentioned, at least until we have more data to substantiate it. Undoubtedly Harmon's remarks accurately describe the organization of a great many of the tribes above; nevertheless, there is a possibility that these generalizations are not typical of the culture of one or more of them.

In all probability family hunting territories also characterize the social organization of the tribes

¹ Harmon, D. W., *A Journal of Voyages and Travels in the Interior of North America*, *Trail Makers Series*, New York, 1903, pp. 330-331.

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not only north of the Great Lakes but, in some regions, south of them as well, for they have been reported from Minnesota where the White Earth band of Ojibwa still retain this aboriginal land system.¹ From a theoretical point of view, therefore, we should expect to find them also in the intervening region.

Except for the areas described above, very little attention has been devoted to the subject of aboriginal land ownership for the rest of North America. Taking into consideration the general cultural conditions of the native tribes of the northwestern part of the continent, where there is a similar economic life and environment, the occurrence of family hunting territories would cause no surprise; however, in the Mackenzie basin, the area in which they would be most logically expected, they seem to be lacking entirely. At least no information has been brought forth at the present time to show their presence there.²

In a great part of the Mackenzie area, especially in the far north, it may be found that the wandering caribou, which range the country in large herds,

¹ Speck, F. G., The Family Hunting Band as the Basis of Algonkian Social Organization, *Amer. Anthr.*, N. S., XVII, no. 2, 1915, pp. 303-304.

² I am indebted to Mr. Diamond Jenness, who has kindly given me the following quotation from Mr. G. Blanchet, a topographical engineer of the Canadian Government, who has done much exploration work in the Mackenzie area. The latter says, "I do not think there were, or are, any family rights in hunting."

may have influenced the social organization of the Indians there in a manner similar to that noticed in the northern part of the Labrador peninsula. In all probability large herds would cause hunting to be carried on by a group of several hunters rather than through the activities of a single hunter and his family. However, before any definite conclusions may be drawn on this whole question of family hunting territories for this general region, we must first secure information on the regulations, if they exist, which are followed in the hunting of the fur-bearing animals. As in the Northeast, it goes without saying that we should not expect to find the family hunting territory in its intense form among the far northern tribes. At the same time, it seems obvious that this institution is not to be expected among the northern Plains tribes which roved the Canadian plains and prairies. Between these two groups mentioned, that is, in the area occupied by the Chipewyan, Slavey, Beavers, and Carriers, there would seem to be an area suited in every respect to the development of the family hunting territorial type of organization. For these tribes we have little detailed information. Simpson, in describing the undefined region east of the Rocky mountains, which region may include part of the habitat of the above mentioned peoples, gives the ambiguous statement that—

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The hunting grounds descend by inheritance among the natives, and this right of property is rigidly enforced.¹

Among the Sekani, on the other hand, Jenness received only negative statements in respect to family hunting territories. He states:

Several informants independently asserted that formerly hunting grounds belonged to the entire band, and were not subdivided among the various families. Today a man's trapping ground is normally his hunting ground, and recognized as such.²

Morice, for the western Déné, however, gives a suggestion worthy of a more detailed inquiry when he says—

. . . des Dénés occidentaux étaient de temps immémorial délimitées d'une manière des plus précises, et qu'une violation de ces limites constituait dans bien des cas un véritable *casus belli*. Il était toujours permis de tuer au passage et sans lui tendre des pièges, par exemple, un castor ou une loutre qui provoquait l'arc ou le fusil du voyageur le long des voies fluviales ou autres reconnues comme chemins publics; mais, en dehors de ces cas, chacun devait et doit toujours (car cette loi fondamentale n'a jamais été rappelée), se garder scrupuleusement d'abattre le moindre gibier à fourrure ailleurs que sur les terres assignées à son clan ou à sa famille.³

¹ Simpson, Thos., *Narrative of the Discoveries on the Northern Coast of America*, London, 1843, p. 75, quoted by Morice, A. G., in *Archæological Report for 1905*, Toronto, 1906, p. 202.

² Correspondence with Mr. Diamond Jenness.

³ Morice, A. G., *L'Origine des Dénés*, Saint-Boniface, Man., 1916, p. 122. It should be pointed out that in this respect the Déné family is more like the Northwest Coast tribes than the eastern Algonkians.

The presence of the sib in this area complicates somewhat the question of land ownership as is implied by Father Morice's statements. In all probability this represents the results of influences which have diffused from the Northwest coast, for the sib system seems to grow in intensity as the coastal peoples are approached. This condition is also shown by Morice, as he has indicated in the following quotation:

The headmen or representatives of these gentes . . . formed a privileged class of hereditary chiefs, on behalf of whom the hunting grounds were parcelled out as their lawful patrimony, over which nobody else had any right. . . . To them alone belonged the right of hunting on the lands of the clan, or special portions thereof, with the assistance of related families.¹

Morice gives us no information as to the hunting localities of the commoners of the tribe, a point which needs study; however, it seems clear that among the nobles there could be no direct inheritance of lands, in our use of the term, for since clans (Morice's gentes) are matrilineal, and since it is a rule among these people that "the lands could not be expropriated in favour of a different gens," a son could not possibly succeed to the estate of his father. Here again influences from the Northwest coast may be detected, as will be brought out below.

For the Salish and Athabascan tribes of southern

¹ Morice, A. G., in *Archæological Report for 1905*, p. 202, and in his *Northwestern Dénés and Northeastern Asiatics*, *Trans. Roy. Canadian Inst.*, x, p. 172.

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interior British Columbia it seems certain that family hunting territories are absent at the present day, as has been pointed out by Boas.¹ However, in view of Teit's report for the Lillooet² that when a man died his sons inherited his fishing-station, it seems possible, as MacLeod suggests, that they may have characterized the culture of the people of this general region in the more primitive past before the complex economic influences of the coastal tribes penetrated to them.³ For this reason any attempt to reconstruct the original culture of these people must discount these influences which, theoretically at least, may have caused major changes in economic organization, and which may have completely eliminated the earlier aboriginal land-tenure system.

THE NORTH PACIFIC COAST

On the North Pacific coast we find very different conditions from those to the east of the Rocky mountains. This region, as is well known, comprises a distinctly separate culture area, marked off

¹ Boas, F., The Salish Tribes of the Interior of British Columbia, *Archæological Report for 1905*, p. 219 et seq.; Introduction to Traditions of the Thompson River Indians of British Columbia, *Mem. Amer. Folk-Lore Soc.*, VI, p. 3.

² Teit, J., The Lillooet Indians, *Jesup North Pacific Exped.*, Leiden, 1900-08, p. 255.

³ MacLeod, W. C., Certain Aspects of the Social Organization of the Northwest Coast and of the Algonkian, *21^e Congrès International des Américanistes*, La Haye, 1924, p. 253 et seq.

by its peculiarities from the rest of the continent. Geographical and environmental, as well as cultural forces, have combined to produce factors of local origin which must have greatly modified and changed the original culture of the inhabitants. Because of the natural wealth of the region in fish, the quest for food assumes an entirely different aspect from that followed in the other parts of the continent. In this respect it is of value to note that hunting, in the restricted sense of the word, is secondary in importance to fishing, and for this reason alone we might suspect that family hunting lands would be non-existent. Such, however, does not seem to be the case, for we have several reports which indicate that definitely bounded districts were and still are owned by individuals or families. The term family, however, has been used rather ambiguously by writers in connection with the tribes of the Northwest coast. Generally speaking, the word family may be used in two entirely different senses, the biological and the social. In our discussion we are concerned only with the latter. For the Algonkians the term family implies the small social group of husband, wife, their children, plus in some cases grandparents, collateral kin, or even non-relatives who make their home together. For the Northwest Coast tribes the term family is generally used to designate a somewhat larger social group of nobles, whose relationship is actual or imputed, plus the commoners and slaves who with them occupy a

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house. In some cases more than a hundred individuals may thus occupy the house of a family, and so there is developing the tendency to designate this group a household when they are spoken of in the aggregate. Most writers, however, still use the word family, but it seems that in most cases it is employed only in connection with the nobles. When a family is said to own a certain privilege, it is the nobles of the household to which reference is made, and not the commoners or slaves. When a crest is said to be inherited by a family, the nobles alone are the ones involved. In other words, the term family in descriptions of the social and economic order is seldom employed to include the subservient members of the household, for obvious reasons. We cannot very well speak of a household owning a crest or a privilege, since these are restricted by custom and rule to the nobles of the household. Since commoners and slaves figure no more in economic rights than they do in social ones, a statement that a family owns a piece of land does not mean that the title to such is vested in the household, but, on the contrary, implies that the nobles of that household constitute the proprietors. Apparently we have a case very similar to the plantations of the old South in the United States, where the white titleholders had associated with them free laborers and slaves. Certainly no one would venture the opinion that the freemen and slaves were landowners just because they also used

the land. We can even draw a similar case for the northeastern Algonkians, among whom slavery and social classes were unknown. As I have already pointed out, land ownership among the Algonkians was vested in the male family head, although we speak of the districts as family hunting territories. Now in those instances where non-relatives join a family and become temporarily or permanently associated with it, sharing equally in its fortunes and misfortunes, it cannot be said that they automatically through such an association acquire any right to share in the ownership of the land which they use. In so far as ownership is concerned, they have an economic status similar to the commoners of the Northwest coast. Give the northeastern Algonkians the economic background for a great increase in population and it is likely that they would develop a feudal system such as was found along the Atlantic seaboard and which, broadly speaking, involved the principles of organization noticed on the Northwest coast.

Although it seems quite proper to speak of the districts of the Northwest coast as hunting territories, it might be better to designate them as fishing territories, since they appear to be used mostly for that occupation. Hunting, nevertheless, is always an important supplementary activity, and for that reason, and in that respect, the districts seem to be similar to those of the eastern part of the continent, and therefore they may be subjected to the same

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appellation. In speaking of hunting territories we are using the term in its broadest sense. Let us now consider the evidence from this region.

THE TLINGIT

The Tlingit, for instance, according to information furnished by Mr. Louis Shotridge, himself a Tlingit, and a member of the staff of the University Museum, Philadelphia, possess both clan and family hunting territories. The lands owned by individuals are indicated on the accompanying map by cross-hatching.¹ The other recorded areas include both village-sites and clan hunting lands. The former may be distinguished from the latter, generally speaking, since they are occupied by two or more clans, whereas the lands used solely for hunting and fishing are usually claimed by only one clan. It must be pointed out that this is not a hard-and-fast rule, for in a few cases there are hunting lands, as the map shows, which are owned jointly by two clans. The numbers on the map represent the clans, as follow:

¹ Mr. Shotridge very kindly made the draft of the accompanying map, which shows the region of his tribe. He has also given the clan names and their meanings.

Tlingit	Raven	1. Ǵànáx-tè'dí	People who came from Ǵànáx.
		3. Tìx-è'dí	People belonging to ice.
		5. Càkà-q'á'n	Dwellers of up-stream town.
		7. Łùkàx-'ádì	People belonging to Łùkàx.
		9. Tà'ł-q'wè'dí	People belonging to Tà'ł-qu.
	Eagle	11. Nù'w'càkà-'à'yí	People upstream from fort.
		2. Kàq'àn-tà'n	Dwellers of burnt house.
		4. Dàǵìsdì-nà	People who wandered into the inland passage.
		6. Dàǵ-l'èw'wè'dí	People of the sand beach on the back side.

The land-tenure system of the Tlingit presents many peculiar traits which are not only of general interest but of great importance to our discussion. As will be noticed on the map, each clan possesses several hunting districts which it owns individually. Theoretically, this land is strictly clan territory; in practice, however, in those instances where the clan population has not been severely decimated, the entire hunting district is further subdivided into lesser plots. Each of these is occupied temporarily by a family during the hunting or fishing season, but the members are recognized as having permanently an inalienable right to the territory,

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and these rights are inherited. Inheritance, however, so far as these subdivided clan territories are concerned, must take place within the clan. Because of the existence of matrilineal descent it is impossible for a son to inherit such a territory from his father; therefore these districts are usually acquired by the owner's sister's son, since such an individual comes within the clan restrictions on ownership. An owner, it is important to note, does not necessarily have to bequeath his property to a nephew, although this would be the usual procedure, for he has the privilege of leaving it to anyone who is a member of his clan.

Since the clan is theoretically in the position of overlord of the entire area, the privilege of hunting, fishing, and berrying upon its lands is by custom retained as a clan right; hence in the actual working out of this scheme a son, being of a different clan, is prohibited from inheriting the land of his father. Until the time of his father's death, however, that is, during the time that his father's family is still intact, sons are permitted the right to hunt on their father's land as members of his family. On the death of an owner they automatically lose this privilege, and thereafter, when they go out to hunt, it is necessary that they attach themselves to a member of their own clan—their mother's brother, for instance. In the long run, no land embarrassment would be caused, for they in turn would probably inherit land from their maternal uncle,

and so the scheme works out with equal advantage to all. In a great many cases the nephew who inherits the crest, rank, and privileges, so well known among tribes of this region, would also be the one who inherits the rights to the landed property within the clan district.

In addition to family plots over which there are clan restrictions as to ownership, but which in other aspects conform closely to individual holdings, we also find hunting territories which are owned outright by individuals. On the accompanying map eight such districts are indicated by cross-hatching. These are family hunting territories in the sense of the term used for the eastern part of the continent, and differ only in that the family does not occupy its territory the year round, but only during certain seasons or when short expeditions in search of food are required. At other times the people dwell in their village homes. In respect to the individual holdings the clan of the owner exerts no control, and so a father can leave such estates to his sons, in spite of the fact that the latter belong to a different clan. In these cases the clan of the owner would change with each generation according to the clan of the mother of each successive owner.

The Tlingit territories, both clan and family, may be classified into several different types. Generally speaking, since fishing constitutes such an important means of livelihood throughout this region, most of the territories would come under the category of

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fishing-grounds. It is to be noticed that practically all of the districts are along the banks of the streams which flow into the greater waterways. Hunting of the smaller animals, however, is carried on wherever profitable. In addition to the general fishing (and hunting) territories, there are districts far back in the mountains which are used solely for the hunting of mountain-goats and other large game. Two such territories are to be found on the distant tributaries of the Katzeihin river. According to Mr. Shotridge these areas are seldom utilized, and they are not subdivided into lesser districts as are the fishing territories. In general we may designate them as hunting reserves which are retained for the exclusive use of the members of the owner clan. It is possible, however, to lease the right of hunting on them to members of other clans. Seemingly, if no clan member is utilizing one of these areas for hunting, anyone else, of any clan, may apply to the owner-clan's headman for permission to hunt. Usually no rental price is determined, but there is a tacit understanding concerning the tribute to be paid to the clan, the amount depending, of course, on the success of the hunt.

There are also territories devoted to the hunting of seals. A very important one is the small island off Seduction point, between Chilkoot and Chilkat inlets. Although it seems that clans 7 and 11 had the greatest claims to the island, in the present day, at least, the other clans seem to make some use of it too.

Lastly, there are the berrying-grounds which in some cases are owned by clans and in others by individuals. The two territories at the head of Chilkat lake are used exclusively for berry-picking and are owned by Mr. Shotridge (a member of clan 2) and his uncle (a member of clan 1) respectively. The berries grow in such abundance that it is impossible for one family to consume more than a very small proportion of the crop, and so invitations are extended to the entire tribe to come and partake in the consumption. At the time designated, all the people who accept, regardless of clan affiliations, come to the territory and set up their camps on the shore. One must not pick a berry, however, until after the owner has arrived and extended to all this privilege.

Although no detailed studies on the question of land tenure have been made for the tribes of the Northwest coast, there are nevertheless several reports from scattered sources which appear as significant in view of the Tlingit material presented. To supplement the latter we are informed by Krause that—

Die Tlinkit haben einen ausgebildeten Eigentumsbegriff. Er hat nur seine eigenen Kleider, Waffen und Geräte, er hat auch seine eigenen Jagdgebiete, seine eigenen Handelswege, die kein anderer benutzen darf, ohne seine Erlaubnis oder ohne ihm Entschädigung zu gewähren.¹

Niblack, moreover, in speaking of the general region of the Northwest coast, is more detailed in

¹ Krause, A., *Die Tlinkit-Indianer*, Jena, 1885, p. 167.

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his information, although less explicit in his localization. He generalizes for all the tribes as follows:

The whole of the territory on the northwest coast adjacent to the Indian villages is proportioned out amongst the different families or households as hunting, fishing, and berrying grounds, and handed down from generation to generation and recognized as personal property. Privilege for an Indian, other than the owner, to hunt, fish, or gather berries can only be secured by payment. Each stream has its owners, whose summer camp, often of a permanent nature, can be seen where the salmon run in greatest abundance. Often such streams are held in severalty by two or more families with equal privilege of fishing.¹

We are also told that the Wakashan-speaking peoples, who inhabited the western coast of British Columbia between 54° and 50° 30', the northern and western parts of Vancouver island and the extreme northwestern corner of the State of Washington, "hunted land and sea animals and collected shellfish, roots and berries, each family owning its own fishing grounds and salmon creeks, which it guarded jealously."² In respect to the Kwakiutl of Vancouver island, it seems that there is individual ownership of hunting lands, although the statements made contain considerable ambiguity on this point.³

¹ Niblack, A. F., *Indians of the Northwest Coast, Rep. U. S. Nat. Mus., 1888*, p. 298.

² Bulletin 30, Part 2, Bureau of American Ethnology, Washington, 1910, p. 895.

³ Boas, F., *Ethnology of the Kwakiutl, 35th Ann. Rep. Bur. Amer. Ethnol., 1921*, pp. 1345-1348.

Individual family hunting territories are also reported for the Tsimshian, for whom it is said, "The hunters had hunting-grounds which were their personal property."¹ One case is recorded of a man owning four hunting territories, each including a valley;² and we are further informed that, in one instance, at least, a man inherited his hunting land from his father.³

According to Swanton, family hunting lands prevailed as the basis for the economic organization of the Haida. He says:

Each Haida family had its own creek, creeks, or portion of a creek, where its smoke-houses stood. Some of the smaller creeks are said to have had no owners; and, on the other hand, some families are said to have had no land. In the latter case they were obliged to wait until another family was through before picking berries, and had to pay for the privilege.⁴

Baranov island and the general region about Sitka form the home of the Sitkans. In respect to this group we have very good information from Elliott, who reports practically all of the features of family hunting territory organization.

The Sitkan Indians trouble themselves very little about the interior country; but the coast line, and especially

¹ Boas, F., *Tsimshian Mythology*, 31st Ann. Rep. Bur. Amer. Ethnol., 1916, p. 401. See also pp. 138, 152.

² Ibid., p. 108.

³ Ibid., p. 244.

⁴ Swanton, J. R., *Contributions to the Ethnology of the Haida*, *Jesup North Pacific Expedition*, Leiden and New York, 1905, p. 71.

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the margins of rivers and streams, are duly divided up among the different families. These tracts are regarded as strictly private property, just as we would regard them if fenced in as farms and cattle ranches—and they passed from one generation to the other in the line of savage inheritance; they may be sold, or even rented by one family desiring to fish, to gather berries, to cut timber, or to hunt on the domain of another. So settled and so strict are these ideas of proprietary and vested rights in the soil, that, on some parts of the coast, corner-stones and stakes may be seen today set up there to define the limits of such properties between savages, by savages; and furthermore, woe to the disreputable trespassing Siwash who steps over these boundaries and appropriates anything of value, such for instance, as a stranded whale, shark, seal, or otter—berries, wreckage or shellfish.¹

COMPARISON OF LAND SYSTEMS IN NORTHEAST AND NORTHWEST

Compared with the family hunting territories of eastern North America, the family territories of the Northwest coast seem to present no fundamental differences. As we have seen, there is a concept of land ownership by the individual male family heads, this concept being of two types: the one in which the ownership is absolute, the other in which the right of ownership is restricted by clan membership. In both cases, so far as the actual supervision of a territory goes, the control exercised by the owner is complete.

¹ Elliott, H. W., *Our Arctic Province*, New York, 1886, p. 54.

In respect to inheritance it has been pointed out that the peculiarities which have caused a deviation from a procedure in which the property descends directly from father to son, are due to the influences of the clans; nevertheless, in a great many instances those individual holdings which are outside the pale of clan control are inherited directly from father to son, regardless of clan affiliation.

In eastern North America the question of boundaries is important, but on the Northwest coast these seem to be given much less consideration. Boundaries do exist, but without the significance attached to them in the East, and this is to be expected for several reasons. Very few Tlingit territories are contiguous to any others, for in most cases each of them includes a small valley which is separated from the next by impassable mountains and glaciers. These territories, therefore, can be approached only from the coast. In respect to the individual holdings within the clan territories, the boundaries of each are definitely known in much the same manner as in the East. Generally speaking, boundary-lines of the family areas extend across the valleys and not parallel with them, except along the waterways. Along the sides of the valleys the territories automatically reach a natural boundary when the steep slopes of the mountains are encountered.

Patrilocal residence is customary in both parts of the continent. Here again, however, there are

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important differences to be noted, and these also are due to the restrictions by the clans. Whereas in the East the man brought his wife to the land where he had been reared and which he owned or would own as the result of the rule of direct inheritance from father to son, among the Tlingit the man took his wife, when he hunted, to an area different from the one he had hunted over as a boy in company with his father. In this region a couple would hunt and fish on the land belonging to the clan of the husband or upon the land which the latter had inherited from his maternal uncle or some other member of his clan.

The prohibition of trespass is also a common feature of the Northwest Coast territories. This has been shown for the hunting lands and the berry-picking territories. In respect to the subdivided clan districts, the feeling of local clan consciousness very often results in negligence concerning the family boundaries; but such is the result of the mutual friendship of the families concerned, and this in no way invalidates the theoretical prohibition against trespassing, or the right to enforce such a restriction.

HISTORICAL BACKGROUND OF CLAN TERRITORIES

The historical development of the concept of clan ownership from that of individual or family ownership seems to be inferable on several points. In the first place, it is to be noticed that the clan

names are entirely of local derivation, and this would seem to imply that the clan system has been acquired by these people since they occupied their present habitat. Before the introduction of the clan, therefore, there could have been no concept of clan ownership of land. It is possible that no land-tenure system existed or that all land was considered the property of the tribe; but neither of these alternatives seems plausible in view of the prevailing custom in the present day of not only absolute ownership of land by individuals in some cases, but also of practically the same thing within the clan territories, where the individuals hold their own parcels of land, over which the clan is theoretically overlord.

In view of these considerations, strong support is given to a theory that family holdings existed prior to clan holdings. In reality the clan seems to have only a nominal control over the so-called clan territories. The hunting lands far back in the mountains which are used only occasionally and, comparatively speaking, are not important, appear as exceptions to this statement. I have pointed out the fact that the other clan holdings are subdivided into individual family plots. In a final analysis it seems that the only control exercised over the latter by the clan is the insistence that title can pass only to clan members, in much the same way as a civilized state might prohibit the sale of land to persons other than its own nationals. Clan consciousness,

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in other words, seems to have surpassed in importance the concept of individual ownership only in respect to the question of inheritance, for basically the institution of private property appears to be, in its fundamental concept, the same as in eastern North America.

In the present day, owing to the depleted ranks in population, some of the clan territories are used by single families, but the idea of clan overlordship is still retained. There seems to be a tendency, therefore, for entire clan territories to come under the control of small consanguineous groups which alternate ownership in each generation from father to nephew. In other words, because of modern influences, the family holdings are becoming larger and thus the process seems to have completed the circle of evolution, for hypothetically it seems logical to suppose that originally the population was quite small and that the original family holdings were larger than those noticed in more recent times. Supposedly, as population grew, the larger territories became subdivided either before or after the clan system, and the procedure of indirect inheritance became instituted.

Now, although it is to be admitted that many differences are to be noticed between the family hunting territories in the West and those in the East, it appears to me that in a final analysis these differences are distinctly minor in consequence and that fundamentally the two land systems are quite

similar. Except for the variations to be expected between territories devoted to hunting and those utilized primarily for fishing, it would seem that the two represent the divergent applications of what originally were quite similar concepts. In the first place there is the difference in the population of the average territory of each region. This has already been discussed. However, it seems quite obvious that this is a difference in degree and not in kind, for it does not follow that an increased population need change the actual concept of ownership itself. The land-tenure *concept* does not seem to have been affected by the greater numbers in population of the Northwest Coast territories.

Further differences in the two regions have also been noticed as the results of differences in topography, but the greatest divergences appear to be due to the peculiar economic developments of the Northwest Coast region and to the secondary effects of the complex social structure. Because of the intensive influences of these factors, it seems reasonable to believe that the family hunting territory differences have developed as a result of these institutions. Taking into consideration all the factors involved—economic, social, geographical, biotal, and occupational—the points of similarity appear to outweigh in importance the differences which have been observed.

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SUMMARY

To summarize this material, it is to be admitted that it is indeed fragmentary and, in many cases, the quoted statements are ambiguous as to meaning; nevertheless, taken in the aggregate it is strongly suggestive, especially in view of the more detailed Tlingit data. Certainly the distribution of the tribes and locations from which the information has been taken is of decided importance, for, generally speaking, the reports have come from practically all of the tribes of the Northwest Coast culture area. It must not be supposed, however, that a detailed field study would bring out identical appearances of the family land-tenure system among all the tribes concerned. In all probability there are a great many divergences even within this one culture area; however, these may be assignable to the differences in the intensity of the more complex economic organizations and social systems, as well as to the variations in local geographical and occupational conditions.

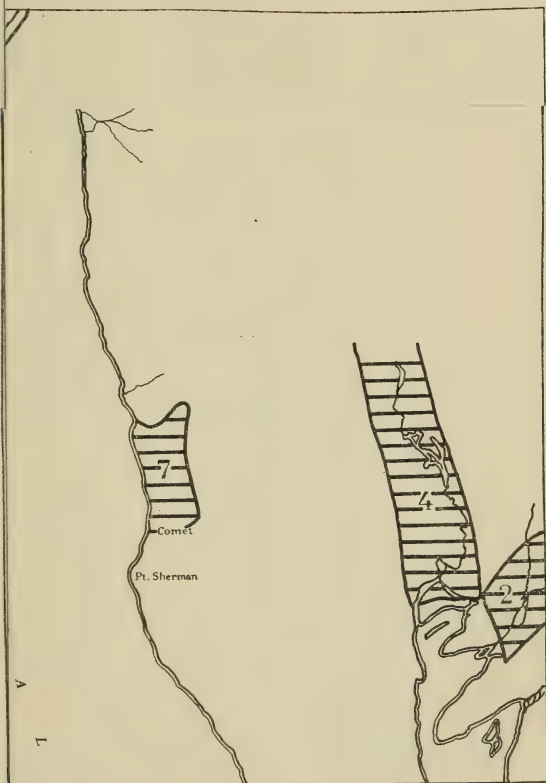
In view of the great area from which our information has been taken, it seems to me that considerable emphasis may be given to the supposition that individual family lands have been of great significance throughout this region for long periods of time. It therefore seems allowable to suspect that this system may be perhaps more ancient than clan land ownership.

To bring this discussion to a close, I believe that the information has been sufficient to indicate the existence, both at the present time and in the past, of family holdings in land throughout a great part of northwestern North America west of the Rocky mountains. It is to be admitted that it is impossible to state definitely just what traits may characterize these family territories, since it is evident from the material at hand that there may be considerable variation. However, as we have seen, it seems very probable that the intricate economic institutions of the Northwest coast, the complex social structures, and the topography of the region, may be partly or wholly responsible for these divergences. If such is the case, it follows as a reasonable deduction, since these local peculiarities are probably later in origin, that the family territories, comparatively speaking, are fundamental.

As a final consideration there is the question of the relationship between the family hunting territory system of the Northwest coast and that of northeastern North America—one which at the present time, at least, appears as a complicated problem. If we grant for the moment that the features concerned are identical in the two regions, it does not necessarily follow that the two appearances are historically connected nor that a diffusion of the idea has taken place in one direction or the other. Neither conclusion would be justified in my opinion until the land question of the entire Mackenzie

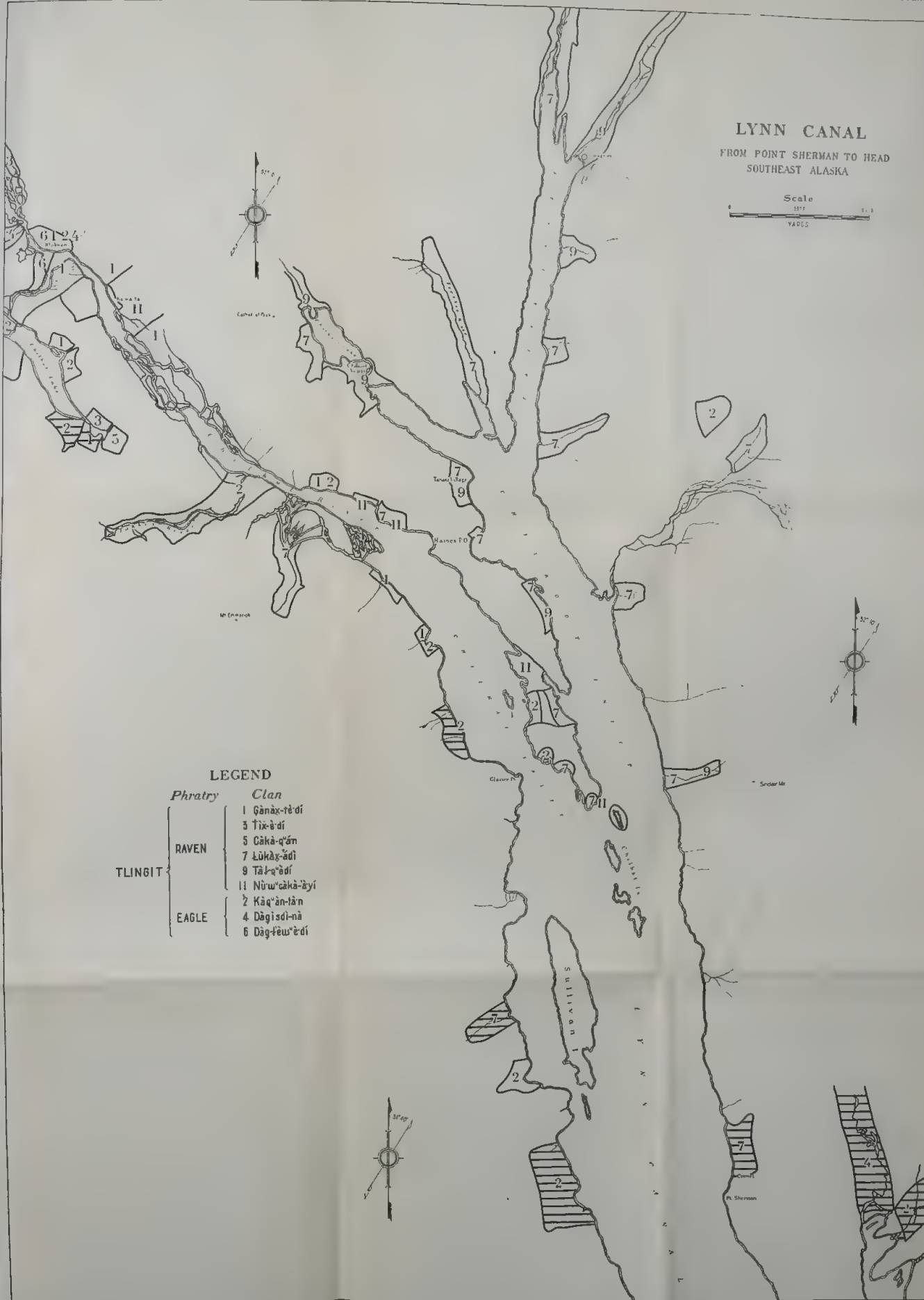
34 HUNTING TERRITORIES

region has been definitely settled. A contiguity in distribution would naturally lend great support to a theory of a single origin; nevertheless, we are here dealing with an institution so simple in its very nature and one which occurs among so many peoples of the world who could not have had culture contact with one another, that it must have originated independently in a great many widely separated localities. If it can be shown that family territories are totally unknown throughout the area separating the Northwest coast from northeastern America, my own conclusion would be that convergence is to be held accountable for the two appearances.



LYNN CANAL FROM POINT SHERMAN TO HEAD SOUTHEAST ALASKA

Scale
0 100 200
YARDS



INDIAN NOTES AND MONOGRAPHS

EDITED BY F. W. HODGE

No.



47

A SERIES OF PUBLICA-
TIONS RELATING TO THE
AMERICAN ABORIGINES

POTTERY AND OTHER ARTIFACTS FROM CAVES IN BRITISH HONDURAS AND GUATEMALA

BY

GREGORY MASON

NEW YORK
MUSEUM OF THE AMERICAN INDIAN
HEYE FOUNDATION

1928

THIS series of INDIAN NOTES AND MONOGRAPHS is devoted to the publication of the results of studies by members of the staff and by collaborators of the Museum of the American Indian, Heye Foundation, and is uniform with HISPANIC NOTES AND MONOGRAPHS, published by the Hispanic Society of America, with which organization this Museum is in cordial coöperation.

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BY GREGORY MASON

THE Museum has recently come into possession of a collection of artifacts, mostly pottery, found in caves in British Honduras and Guatemala by the Mason-Blodgett Expedition, which left New York on February 4, 1928, and returned on June 19 after making archeological, ethnological, and zoölogical collections in Mexico, British Honduras, and Guatemala.

The Museum provided the writer with funds for the collection of ethnologic materials. The Museum of Comparative Zoölogy of Harvard University made a substantial contribution toward the expenses of Mr. Oliver L. Austin, Jr., the expedition's naturalist. The general expenses and the cost of the archeological work were met by equal contributions from Mr. Thomas H. Blodgett, President of the American Chicle Company, Mr. Bartlett Arkell, President of the Beechnut Packing Company, and myself. Liberal assistance in the form of transportation and food was given by Mr. Sheldon S. Yates, President of the Chicle Development Com-

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pany, who was himself a very able and *simpatico* member of the field party. My warm thanks are due Messrs. Blodgett, Arkell, and Yates for their generous approval of my wish that the modest archeological collection which we were fortunate enough to make should go to the Museum of the American Indian, Heye Foundation; or rather, that half of it go to the Museum. The Government of British Honduras retains title to the other half, but thanks are due to the Governor and Council of the Colonial Government for graciously lending this half to the Museum for one year. At the expiration of that time it is to be lent to the British Museum for an indefinite period.

I shall not here descant upon what the expedition did in the exploration of several surface sites nor in the excavation of burial mounds, but shall confine myself to a description of the archeology of the caves above mentioned.

One of these caves is fifteen miles up the Rio Chocon from its mouth on the Golfete, in the Izabal district of Guatemala. This had been looted by persons from Livingston some time before our arrival, and although I heard of large incensarios having been carried away, the only object of note which we found, besides coarse sherds of a common type, was the vase, since reconstructed, of a tolerably thin, almost lead-colored ware, with lateral and diagonal incised lines (fig. 1, *b*). This has a base diameter of $4\frac{7}{8}$ inches.

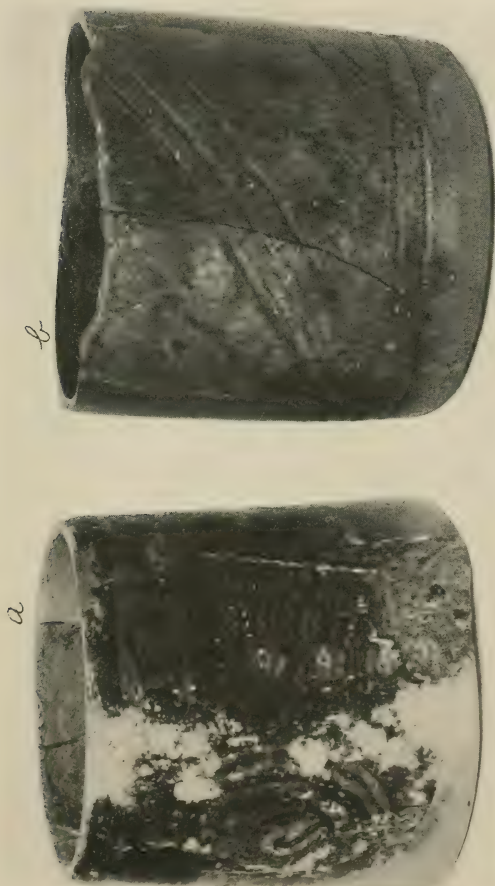


FIG. 1.—*a*, Vase from Cave A, 12 miles southeast by east of Benque Viejo, District of Cayo, British Honduras. *b*, Vase from cave on Rio Chocon, Izabal district, Guatemala. Basal diameter of *b*, $4\frac{1}{8}$ in. (16/1862, 1863)

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The other four caves are in the southern part of the Cayo district of British Honduras. Three of them, close together and forming what I consider



FIG. 2.—Vessel from Chikin Ac Tun, "Western Cave," 9 miles west of Rio Frio caves, District of Cayo. Height, 5 in.

one site and have called the "Rio Frio caves," are about twelve miles southeast by east of Benque Viejo and eleven and a half miles east of the Guatemalan border. One of them is traversed by and



FIG. 3.—Fragment of a chocolate-pot from Chikin Ak Tun cave, 9 miles west of Rio Frio. Extreme height of fragment, $4\frac{1}{8}$ in.

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the other two are within a mile of the Rio Frio, sometimes called Pinola creek, which has its origin in the Great Southern Pine Ridge and flows into the Eastern branch of the Old or Belize river above El Cayo. They are in old mahogany forest on the

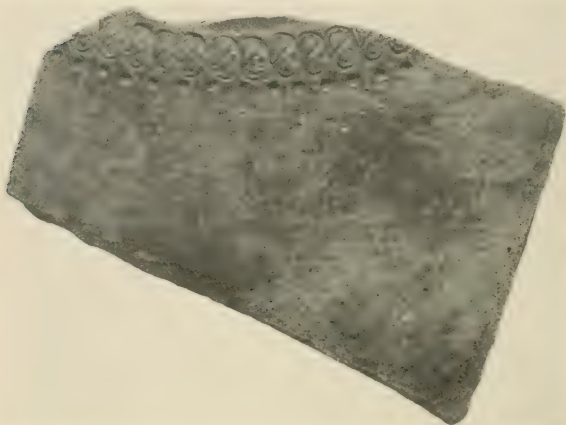


FIG. 4.—Sherd from Chikin Ak Tun cave, 9 miles west of Rio Frio caves, District of Cayo. Length, $5\frac{3}{8}$ in. (16/1833)

edge of a part of the Great Southern Pine Ridge called Agustín, which is an abandoned cattle ranch. The fourth cave, which seems to have been the center of a settlement marked by remains of many agricultural terraces, I have called *Chikin Ac Tun*, or "Western cave," for no better reason than that

it is close to the western boundary of British Honduras and about nine miles west of the Rio Frio group.

This fourth cave is of the wide-mouthed type, the entrance being some sixty feet high and a hundred feet wide. It is dry, and large enough to have housed 300 to 400 Indians comfortably. Potsherds were scattered plentifully throughout the cavern, and especially in subdivisions off the rear and sides of it. In one of these small chambers we found the complete pot illustrated in fig. 2. This is 5 inches high, 5 inches in diameter through the thickest part, and $3\frac{3}{4}$ inches at the mouth. It is of smooth, fairly thick ware of a sort of mottled tan color with a simple black painted geometric design faintly visible around the upper half. Other finds in this cave were part of a chocolate-pot (fig. 3) and two sherds bearing the clearly stamped design illustrated on the piece shown in fig. 4.

The Rio Frio caves, or two of them at least, afforded much more voluminous treasure; Cave B, which is of the wide-mouthed variety, is the smallest of the three in this group, has no water supply, and yielded only common rough sherds without design. However, some 200 yards away, across a little cañon, and higher up the face of the opposite hill, is the mouth of the really remarkable cavern we have called Cave A.

The first one sees of Cave A is a gash in the hill about ten feet wide and forty feet long under a lip

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of bare limestone. At the right extends a considerable cave with several subdivisions or chambers in which sherds were found; but the entrance to the main cave is at the left, and steeply downward. A wall of large stones had been put across most of this entrance by the ancient inhabitants, probably both to make the cave easier to defend and to keep large stones from rolling into it.

The first impression one gets of the interior of the cavern is of heavy white draperies, deeply folded. One keeps descending for some distance, with so many natural passages and chambers at each side that it is wise the first time to unroll a ball of string with one end tied behind at the opening, and to put down candle beacons every thirty or forty feet.

Some two hundred feet northeast of the entrance and sixty feet below it one comes to what I have called the "cathedral," a great round chamber under a high dome of limestone. At different levels—like second and third stories—other divisions of the cave open on one side of this, and from the floor of the third story to the roof reaches up a massive limestone pillar, perhaps twenty feet high and five feet by four in diameter. It seems at first to be the work of man, and I examined it several times before coming to the fixed conclusion that it is not. Its artificial appearance is increased by the fact that low down on its face which looks out over the "cathedral" is an opening like a mouth, with what appear to be upper and lower teeth. At first

I thought this was the open mouth of a typical Maya stone serpent, but I am convinced that these "teeth" are merely small stalactites and stalagmites, although the resemblance to a serpent's jaws is astonishing. Moreover, there were traces of burnt copal incense at the bottom of the "mouth," showing that if man did not make it for ceremonial purposes, man at least used it that way, and not so very long ago.

The old Indian who had shown this cave to my guide, Alfred August (now a small chicle contractor of Macaw Bank), some thirty years ago, told him that at that time Indians of the same tribe which had been inhabiting the cave were living only about thirty miles away in the Peten district of Guatemala.

Going back along the "third story" some eighty feet, we came to the verge of a steep precipice, about fifty feet high. With the help of ropes we managed to descend this to a creek at its base. This creek of limpid water averages about five feet wide and a foot deep for the distance of some 150 feet where it is possible to follow it, from where it enters under low rocks to where it disappears under others which blocked our passage.

When August first told me of this cave, he said he had seen "a lot of pots of different sizes by the side of the creek, each pot with a small round hole in its bottom." This apparent reference to vessels which had been "killed" naturally interested me; but alas, we could find no such cache of pottery.

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August insisted that we had not found the right place, and that the creek must open out into another division of the cave somewhere, but we could not find it. I believe that we *did* reach the creek at the point where August visited it thirty years ago, and that in the meantime some one removed the pots. Imbedded in limestone under the flowing water I found, however, the saucer of plain sandy ware, 2 inches high and $4\frac{3}{8}$ inches outside rim diameter, shown in fig. 5, *a*.

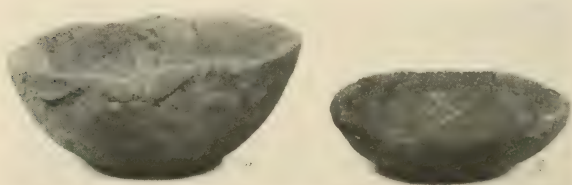


FIG. 5.—Crude vessels from caves 12 miles southeast by east of Benque Viejo, District of Cayo. Outer diameter of *a*, $4\frac{3}{8}$ in. (16, 1867, 1868)

Clambering back up the precipice to the boulder-strewn surface of the "third story," we found fragments of a polychrome vase, which as reconstructed (fig. 1, *a*) is $5\frac{1}{2}$ inches high and slightly wider at the bottom than at the top. This vase is orange-red in color, with the design outlined in black. Above a somewhat badly obliterated painting in which Dr. Morley tells me he thinks he sees the head of a god, is a band of glyphs encircling the

vessel. This appears to be a repetition of two glyphs closely joined—a large one and a small one. The small one resembles *Ben*, one of the Maya day signs, and might pass for that. The ware of this vessel is thin and smooth, the drawing well executed, and on the whole the receptacle is a closer approach to the best Maya polychrome pottery than anything else in our collection.

Like three intact vases of similar type which we were soon to find in this cave, it might be described as Maya polychrome pottery of a somewhat decadent period. The first of these three intact vessels was found by August while I was absent from the cave, and he never succeeded in definitely locating for me the niche in which he came upon it. (This is not surprising, considering that he remained with us only one day and that the rest of us found ourselves capable of quite easily becoming "lost" in the ramifications of the cavern during the week that we searched it.) This vase (fig. 6) is of smooth, rather thin red ware, and is $7\frac{1}{2}$ inches high and 6 inches in diameter, being nearly cylindrical. In a yellow band $1\frac{3}{4}$ inch deep around the top are nine red glyphs, no two alike, and none of them decipherable now, if they ever had more than a purely decorative significance.

The other two intact vases of this type were found close together on the rocky floor of one of the innumerable small natural chambers of a cave, or labyrinth of caves. The laborer who found them

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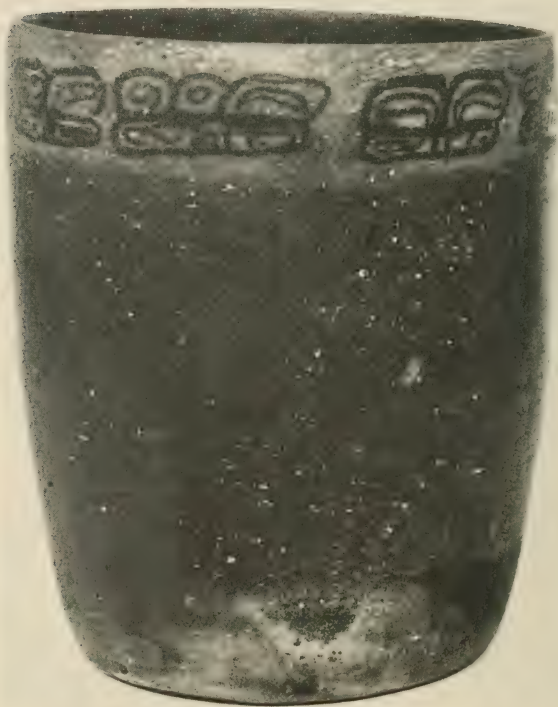


FIG. 6.—Cylindrical polychrome vase from Cave A, Rio Frio group.
Height, $7\frac{1}{2}$ in.

declared that each had contained a small quantity of "fine, gray ashes," which, alas, he carelessly threw away before he brought them to me. (This



FIG. 7.—Cylindrical polychrome vase from Cave A, Rio Frio group.
Height, $5\frac{1}{8}$ in.

sort of mishap is one of the disadvantages of trying to do a great deal of work in a short time; I could not keep my eye on each of my five men at once.)

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Of course it would be interesting to *know* that they were funerary urns. They are almost equal in size, and are slightly smaller than the vessel described in the last paragraph. The old laborer who found them called them "goblets," a word which well suits their shape. One is $5\frac{7}{8}$ inches high and of $5\frac{1}{2}$ inches diameter (fig. 7); the color is orange. Below a black marginal line a black glyph repeated seventeen times encircles the top of the vase; below these, in four black circles of three inches diameter, are four red glyphs, or red designs which seem to suggest the serpent motive. The other vase of this pair (fig. 8, *b*) was my first choice when I divided the collection with Captain Gruning, of the British Museum, in behalf of the Colonial Government. It is 6 inches high and $5\frac{1}{4}$ inches in diameter, of orange-yellow ware, three-sixteenths of an inch thick. At the top between black borders sixteen red glyphs encircle the vase, no glyph being repeated. The background on which they lie between the black bands is a clear yellow, a lighter tint than the body of the vase. Encircling this, half-way up the vessel, are six ovals of red, and below them three black bands, each an eighth of an inch wide, and a red one, a quarter of an inch wide, all somewhat unsteadily drawn.

I have mentioned a barrier wall of stones which had been built across the entrance of Cave A. Three similar walls, blocking entrance to inner subdivisions of the cave, had partially fallen or



FIG. 8.—Vessels from Rio Frio caves 12 miles southeast by east of Benque Viejo, District of Cayo. Height of *b*, 6 in. (16/1882, 1881)

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had been partially torn down to permit ingress of visitors who had been ahead of us. Although nearly all the many "rooms" of the cave appeared



FIG. 9.—Platter from cave 12 miles southeast by east of Benque Viejo, District of Cayo. Diameter, $10\frac{7}{8}$ in. (16/1879)

to be natural chambers, some of the passages connecting them showed evidence of man's handiwork. Many of these were very low and tortuous,

so that we were obliged to crawl on hands and knees. Two of them were too narrow to permit my entrance at all. Two of the smallest laborers were induced by a fee to enter these, each of which led into a series of low-roofed chambers containing much pottery, mostly broken. However, we managed to get nearly all the fragments of three wide,



FIG. 10.—Bowl from Cave A, Rio Frio group. Extreme diameter, $7\frac{7}{8}$ in. (16/1878)

shallow dishes of which the one illustrated in fig. 9 is the best in point of decoration. Its inner surface is painted in a red, yellow, and black geometric design. The diameter is $10\frac{7}{8}$ inches. Near it was found the rather pleasingly formed plain bowl, $7\frac{7}{8}$ inches in diameter, shown in fig. 10.

Nearly everywhere in Cave A we encountered necks and other pieces of jars which had probably

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been used to hold water and grain. They varied from 8 to 23 inches in height, the diameter usually nearly equaling the height and in a few cases exceeding it. They were of a thick, coarse, dark-grayish ware, unpainted, but often bore encircling punctate designs, sometimes wavy as in fig. 11. The rim diameter of this specimen is $7\frac{7}{8}$ inches. Some bear eyelets under the neck to facilitate

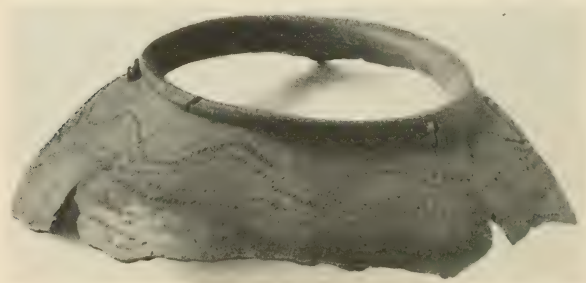


FIG. 11.—Sherd of a jar from Cave A, Rio Frio group. Diameter of rim, $7\frac{7}{8}$ in. (16/1841)

carrying with a cord like the example seen in fig. 12, an olla $13\frac{7}{8}$ inches high. There seems to be no standardized type of lip and neck. Fig. 13 shows a jar whose neck has an outside diameter, across the lips, of only $5\frac{7}{16}$ inches, and fig. 27, *b*, shows a similar vessel with a measurement of $4\frac{9}{16}$ inches, while the example in fig. 14 has a rim diameter of $17\frac{3}{16}$ inches. Other specimens are seen in figs. 15

and 16. None of these ollas have legs, but some of them have circular bases like that seen in fig. 17.



FIG. 12.—Symmetrical jar from Cave A, Rio Frio group. Height, $13\frac{1}{8}$ in. (16/1884)

Only one of these large jars was encountered entirely intact, and that lay in a small room at the end of one of the very narrow burrows above mentioned. My two smallest laborers had quite a task rolling it out ahead of them without breaking it.

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There is no doubt that some of these tight passages have been made smaller by the accumulation of water-deposited earth on their floors. Yet I can account for the presence of this large olla in its



FIG. 13.—Part of vessel from Cave A, Rio Frio group. Outer diameter of rim, $5\frac{7}{16}$ in. (16/1850)

remote chamber only by the probability that some former opening, giving easier access to the spot where we found it, has been blocked by a fall of limestone.

Five other large ollas, unhurt save for small

breaks, I cached in the bush, having insufficient boxes and mules to carry them to Cayo with me. Later from Belize I telegraphed my Cayo foreman



FIG. 14.—Part of vessel from Cave A, Rio Frio group. Outer diameter of rim, $17\frac{3}{16}$ in. (16/1848)

to get them. Although he was quite familiar with their proportions, he took with him only gasoline cases of inadequate size; whereupon he resorted to the expedient of cutting the jars into halves with

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a machete! To make matters worse, the halves were much further broken in shipment to Belize.



FIG. 15.—Jar from Cave A, Rio Frio group. Height, 9 in.
(16/1883)

An interesting feature of Cave C, which is less than a mile from Cave A, is that we found in it no olla or piece of olla like those which were so common in Cave A—so common indeed that they suggest a long and crowded human occupancy of that rocky

retreat. The nearest thing to it from Cave C is illustrated in fig. 18, *c-e*, three sherds shown below two fragments of characteristic jar necks (*a, b*) from



FIG. 16.—Incomplete jar from Cave A, Rio Frio group. Extreme diameter, $7\frac{9}{16}$ in. (16/1851)

Cave A. The specimen shown in *a* has the solid, incised wavy line which we frequently found in both single and double form on sherds from Cave C (fig. 18, *c-e*). The punctate decoration was much more common on Cave A pottery, however. Further-

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more, the Cave C sherds are distinctly lighter in color.

Cave C, open wide and high at each end, is illuminated by daylight throughout the nearly four

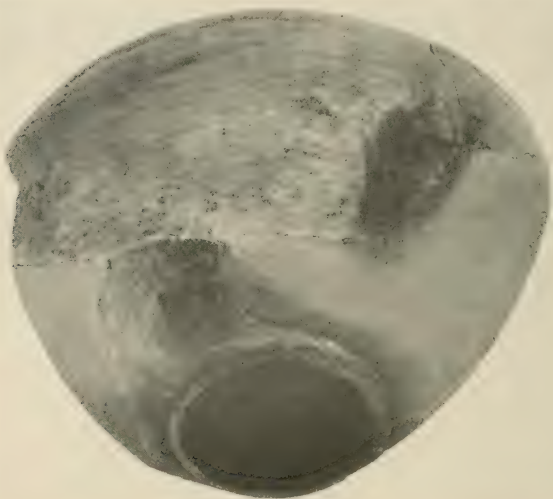


FIG. 17.—Jar from Cave A, Rio Frio group. Diameter of base, 4 in. (16/1856)

hundred yards of its length. It has an air of well-proportioned spaciousness, suggesting a huge Gothic cathedral. We discovered it in following upstream the tumbling little Rio Frio, in the cañon of which it is found.

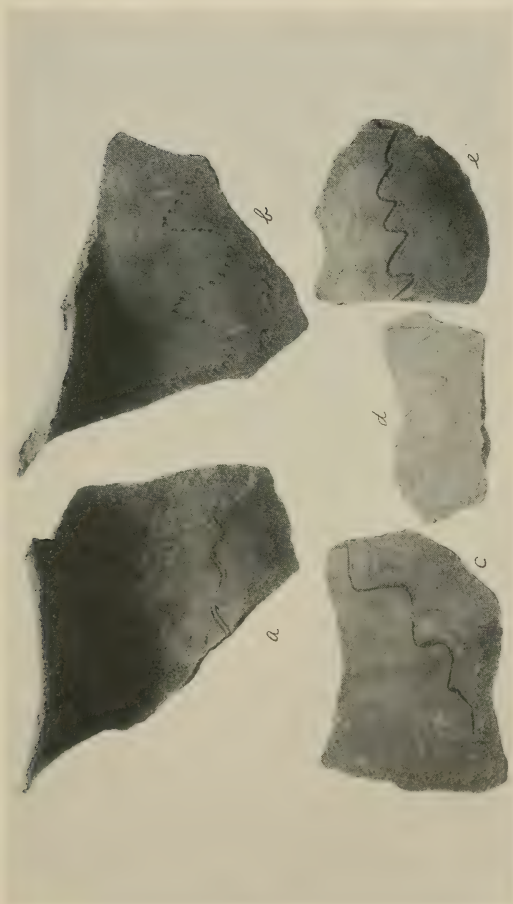


FIG. 18.—Sherds from caves 12 miles southeast by east of Benque Viejo, District of Cayo. Length of *d*, $3\frac{1}{2}$ in. (16/1832, 1833)

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From where we entered the cave, that is, at its downstream opening, it extends a little east of north, or about twenty degrees. In the middle the great natural tunnel swings to sixty degrees. We entered on the southeasterly side of the river, the right bank as one goes upstream, under a yawning lip of bare limestone 150 feet above. The ground rises sharply from the creek and the cave widens to about 250 feet just inside this entrance, leaving considerable space on each side above highwater mark which human beings might occupy. This is wider on the southeasterly side than on the northwesterly, and here were found most of the evidences of former human occupancy which we ultimately discovered.

At the very entrance on this side is a big rock with barely room between it and the wall of the cave for a man to pass to reach a hole in the wall. This opening is waist-high above the floor of the cave, and I could not crawl into it until I had broken off some sharp four-inch stalactites which threatened to rake the back of any one attempting to crawl the nine and a half feet that this apparently natural passage extends before it opens into a cavity about thirty feet long and from three to ten feet wide, but averaging only four and a half feet high. To reach the floor of this little cavern one drops down from the floor of the passage about the distance that one finds it necessary to raise oneself to get into the passage at its outer end. Moreover,



FIG. 19.—Jadeite ear-plug from tomb in Cave C, Rio Frio group. Exact size.

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the opening from the passage into this chamber was too small for all of us except "Chinda," a diminutive Nicaraguan of enviable energy and courage.

After worming through this hole, "Chinda" scratched about on the dirt floor of the chamber a minute and then passed out to me the jadeite ear-plug shown in fig. 19. Its greatest diameter is $2\frac{1}{2}$ inches, and it is pierced on opposite sides of the narrow collar just beneath the flaring lip. "Chinda" searched vainly for its mate, but he soon found the smaller flat jadeite ear-plug, with outside diameter of $1\frac{1}{4}$ inch and inside diameter of $\frac{7}{16}$ inch, shown in fig. 20, *c*. He also found the pendant, made of a stone with which I am unfamiliar, illustrated in the same figure (*e*): it is $2\frac{1}{2}$ inches long. "Chinda" also came upon a slightly smaller pendant of dark jadeite, and many small fragments of human bones, very far gone in disintegration.

I have little doubt that this chamber was used as a tomb. Even though the Maya were a small people, the task of pushing a corpse along that narrow passage and through the narrower inner orifice could not have been easy.

Before he finished his search in this place, "Chinda" discovered in the rather loose dirt of the floor, at depths of from two to six inches, six dishes of thick unpainted ware and of considerable similarity to one another in shape, but varying from $1\frac{1}{2}$ to $2\frac{1}{2}$ inches high, with a top diameter of from 4 to $7\frac{1}{2}$ inches and a bottom diameter of from 3 to $4\frac{1}{2}$

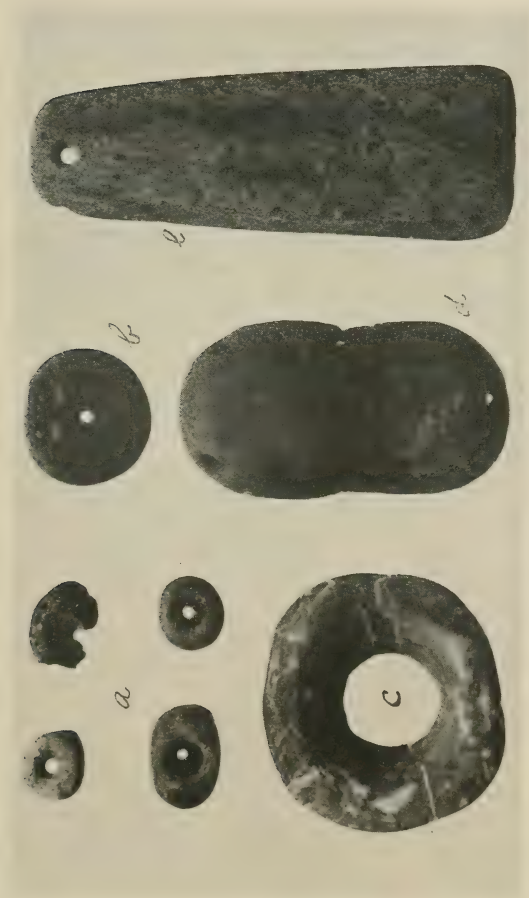


FIG. 20.—Objects from Cave C, Rio Frio group. Exact size.

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inches, although in three of them the bottoms were roughly rounded and one of these had had thick tripod legs. Except that they have flaring lips, these vessels look not unlike the dishes in which our mothers baked cup custards. One is distinctly narrower than the others, and in this the lips flare

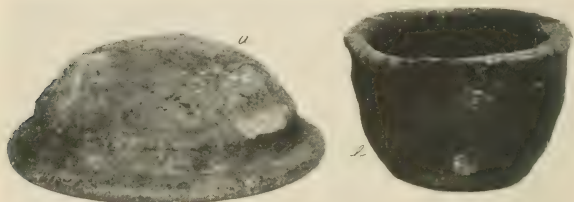


FIG. 21.—Vessels from caves 12 miles southeast by east of Benque Viejo, District of Cayo. Diameter of *a*, $4\frac{5}{8}$ in. (16/1875, 1876)

less (fig. 21, *b*). This example resembles the vessel shown in fig. 22, *a*, found in Cave A. The broader type is exemplified by the vessel illustrated in fig. 23, *a*, and by the one in fig. 21, *a*. The piece illustrated in fig. 23, *b*, was found three inches deep in loose sand under a great boulder projecting from the side of the cave, a spot where other artifacts to be described were found also.

A few feet farther into the cave from the entrance to the tomb just described, I found a structure which I have called an altar, although I am uncertain as to its use. This was thirty feet long, nine feet

wide, and four feet high, built out from the perpendicular wall of the cave and constructed of loose stones without mortar. Some of the stones at the top were no larger than a double fist, while many



FIG. 22.—Objects from caves 12 miles southeast by east of Benque Viejo. Length of *b*, $3\frac{5}{8}$ in. (16/1834, 1835)

at the bottom were two feet in diameter. This altar, if such it was, ends against the great hanging boulder mentioned. Under this rock a space seven by ten feet has a head clearance varying from two to three feet. Debouching into this space is a small twisting tunnel which passed through the base of the altar and was best entered from a perpendicular

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shaft three feet from the farther end of the altar—a round shaft of just sufficient diameter to admit a man. Likewise the little tunnel was barely high enough and wide enough to permit me to crawl through it.

On top of the altar we found a shallow saucer much like the one we had found in the bed of the creek in Cave A. At the junction of the altar with

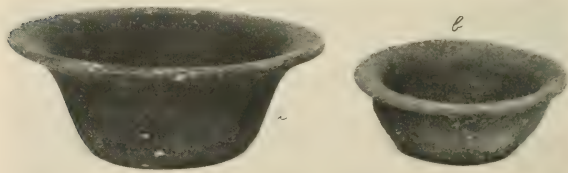


FIG. 23.—Vessels from cave 12 miles southeast by east of Benque Viejo, District of Cayo. Outer diameter of *a*, $5\frac{1}{2}$ in. (16, 1873, 1874)

the boulder was a considerable deposit of ashes. We took the altar down, and scattered under the end of it against the boulder, as well as through the ashes which had been outside of the altar, we found small broken pieces of worked jadeite, four jadeite beads (fig. 20, *a*), and a jadeite button (*b*). At least, this last artifact is much like a button on one side, with a depression in the center which is pierced, but the opposite side is pierced from the flat surface by two diagonal holes which emerge at the rim, reminding one of a Japanese *netsuke*.



FIG. 24.—Sherds from Cave C, Rio Frio group. Length of the largest, $6\frac{3}{4}$ in.

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Along the wall of the cave, between the altar and the mouth of the entrance to the tomb, a distance of about thirty feet, one could tread nowhere without stepping on sherds. They were mixed with the loose sand to a depth of upward of two feet. The

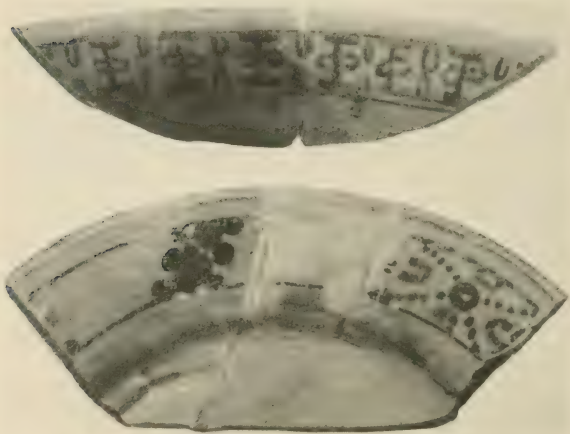


FIG. 25.—Fragments of vessels from Cave C, Rio Frio group. Extreme diameter of lower specimen, $8\frac{5}{16}$ in. (16/1823)

majority are rough common sherds, but many bear incised designs and not a few are decorated with patterns in colors, usually red, black, and yellow, or red, black, and orange. Fig. 24 shows some examples, both of incised and polychrome sherds. Figs. 25 and 26 illustrate the inner and the outer

surface of two pieces from different vessels with interesting polychrome motives. Fig. 27, *a*, showing a rather crude black geometric design in red, was found in the same spot, as was a somewhat better piece illustrated in fig. 8, *a*.

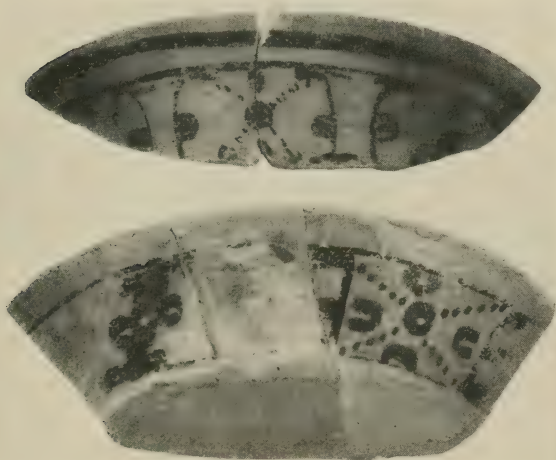


FIG. 26.—Outer sides of the fragments of the vessels shown in fig. 25

Twenty-eight inches beneath the floor of the cave, beside the big boulder already mentioned as standing just inside the downstream entrance to the cavern, we found a human skull in pieces, and a few fragments of the rest of the skeleton. There was no

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suggestion of a grave, much less of such well-made graves of limestone slabs as I had found in burial mounds at San Felipe, two miles southwest of Cayo.

Between the altar and the steep slope down to the river was a terrace, partly artificial, averaging twenty feet wide. This was littered with sherds of many kinds, and may have been a sort of kitchen-midden. From four to eight inches below the

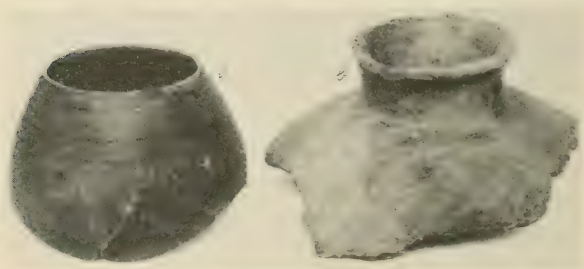


FIG. 27.—Parts of vessels from Rio Frio caves. Outer diameter of rim of *b*, $4\frac{9}{16}$ in. (16/1860, 1852)

surface were quantities of the shells of freshwater snails. The one polychrome sherd and the three sherds with embellishments in high relief, shown in fig. 28, were found here, as were the specimen illustrated in fig. 22, *b*, which is $3\frac{5}{8}$ inches long and may be a pottery coil, and a flint core, $5\frac{3}{16}$ inches in length (fig. 29, *a*).

On the surface of this terrace I found a limestone ball, $2\frac{1}{4}$ inches in diameter, which may have been a



FIG. 28.—Sherds from Cave C, Rio Frio. Length of the largest, $5\frac{3}{4}$ in. (16/1824, 1830)



FIG. 29.—Stone objects from Cave C, Rio Frio group. Length of *a*, $5\frac{3}{16}$ in. (16/1869, 1870)

sling-stone (fig. 29, *c*), and a ball about three times as large, of a darker stone of about an equal degree of hardness, which makes it seem rather soft for a hammerstone (fig. 29, *b*). The best things from the surface of this terrace, however, were several



FIG. 30.—Incensario from cave of the Rio Frio group. Height, $9\frac{7}{8}$ in. (16/1855)

large fragments of two incensarios of the studded, reddish sandy ware type. The one shown restored in fig. 30 is $9\frac{7}{8}$ inches high, and the knobs or nipples are $1\frac{7}{8}$ inches long. In the other one they are $1\frac{1}{4}$ inches. Similar incensarios were found during the

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same season by Mr. J. Eric Thompson of the Field Museum, at a site roughly fifteen miles south by west of the Rio Frio caves.

There are many small chambers and pockets in the sides of Cave C in addition to the tomb already described. In several of these, on each side of the river, we found sherds, betokening early human existence in these lofty pockets (one was under the very roof of the cave) and suggesting comparisons with the cliff-dwellings of our Southwest.

Half a dozen complete saucers of a rough undecorated sandy ware (like the one shown in fig. 5, *b*) were found in a small chamber thirty feet above the main floor and forty feet toward the center of the cave from the altar. This chamber and the others like it would have made an excellent hiding-place in time of war. These saucers are 2 inches high and $3\frac{3}{4}$ inches in outside diameter.

On the northwest side of Cave C, that is, the side opposite the tomb and altar, the largest space suitable for human use is toward the northeastern or upstream entrance to the cavern. Here are terraces of hard-packed sand, which the prevailing easterly wind was sifting into the cave even while we were there. Excavation through several feet of drifted dust and sand here might yield something, but I believe that probably such artifacts as may yet be found in this part of the cave will be discovered in pockets along the side, for man was probably as much averse to mild but frequent sandstorms in those days as he is today.

I do not like to attempt hazardous estimates as to the age of the pieces in this collection, but rather doubt if any of them are extremely early. Some of them might perhaps be called "decadent Maya First Empire polychrome," but that does not help us a great deal. The significant thing is that several pieces seem to represent interesting differences from pottery previously found in Central America. Archeologists have been inclined to regard British Honduras as a peripheral area in which the inferior cultures of collateral tribes were more or less influenced by contact with the "classical" Maya. However this may be, it seems to the writer that the results attained by the several expeditions which have labored in British Honduras during the last decade or so indicate that the pursuit of more intensive work in that colony will be amply repaid.

INDIAN NOTES AND MONOGRAPHS

No.



48

A SERIES OF PUBLICA-
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AMERICAN ABORIGINES

ARCHAEOLOGICAL EXPLORATION OF A ROCK SHELTER IN BREWSTER COUNTY, TEXAS

BY

EDWIN F. COFFIN

NEW YORK
MUSEUM OF THE AMERICAN INDIAN
HEYE FOUNDATION
1932

THIS series of INDIAN NOTES AND MONOGRAPHS is devoted to the publication of the results of studies by members of the staff and by collaborators of the Museum of the American Indian, Heye Foundation, and is uniform with HISPANIC NOTES AND MONOGRAPHS, published by the Hispanic Society of America, with which organization this Museum is in cordial coöperation.

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Contour map of floor of rock shelter and sites excavated, Bee Cave Canyon, Brewster County, Texas

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FOREWORD

The rock shelter to which this report refers was discovered on February 16, 1928, by Mr. M. R. Harrington who recorded it under the name "Eagle Cañon" rockshelter (Indian Notes, vol. v, no. 3, Museum of the American Indian, Heye Foundation, New York, July, 1928), although given on the map of the United States Geological Survey (Nine Point Mesa Quadrangle, Brewster County, Texas) as Bee Cave Canyon. Mr. Harrington, in a letter dated March 15, 1929, says, "I called the canyon Eagle Canyon in place of Bee Cave, as stated on the map, because Ray Miller of Marathon, an old timer in the district, told me that Eagle Canyon was the original name and that Bee Cave Canyon was given it on the spur of the moment by Government men." As it is now recorded on the Geological Survey maps as Bee Cave Canyon, it is so referred to in this publication.

After some work in the rock shelter, reference to which is made in the appendix, Mr. Harrington returned to New York, and shortly afterwards resigned from the staff of this Museum. The results thus far having been of great interest, it was deemed advisable to continue the archaeological investigations of the rock shelter, and in February, 1929, Mr.

Edwin F. Coffin, a member of the Museum's staff, commenced his work where Mr. Harrington left off, and worked on the site until the middle of June of that year.

GEORGE G. HEYE, *Director.*

INTRODUCTION

The expedition, during which the research described in this publication was made, investigated primarily Bee Cave Canyon, and other caves and rock shelters in close proximity to it. Caves in the Hueco Mountains and pueblo sites in the vicinity of El Paso were also examined, as well as a rock shelter in Satan Canyon, a branch of Devil's Canyon, twenty-five to thirty miles northwest of Del Rio, in Valverde County, Texas. The work was carried on under the auspices of the Museum of the American Indian, Heye Foundation, of New York City, and the University Museum of Cambridge, England.

I want to take this opportunity to express my thanks to Mr. Lee Schuler and family, on whose property Bee Cave Canyon is located, for their great assistance and the many favors they have shown me. I wish to acknowledge my obligations to Mr. and Mrs. R. B. Alves, Mr. and Mrs. Fred Woodworth, Colonel M. L. Crimmins, and Mr. Victor J. Smith, for the many kindnesses shown, and the help given me while working in the vicinity of El Paso; Mr. Henry T. Fletcher and Mr. E. E. Townsend, while working near Alpine; Mr. C. A. Markward of Del Rio, for giving permission to excavate a cave on his property in Satan Canyon, Valverde County, and

Dr. John K. Small of the New York Botanical Garden, who identified many of the samples of vegetable substances found in the shelter and brought to New York from Texas.

E. F. C.

ARCHAEOLOGICAL EXPLORATION OF A ROCK SHELTER IN BREWSTER COUNTY, TEXAS

BY EDWIN F. COFFIN

BEE CAVE CANYON TOPOGRAPHY

THE rock shelter is located on the ranch of Mr. Lee Schuler, on the north side and at the mouth of Bee Cave Canyon, Brewster County, Texas, about nine miles southeast of Santiago Peak and about one and four tenths miles east, and a little south, of Black Peak.¹ Bee Cave Canyon is a box canyon, about 1500 feet deep and 400 feet wide at its mouth, and derives its name from the colonies of bees that nest in crevices of the wall of the rock shelter. The canyon opens into Chalk Draw, which at this point is very wide and drains toward the southeast. For over ten miles of its course, beginning a little more than half a mile northwest of Schuler's Ranch, its southern boundary is an almost continuous cliff of limestone, indented here and there with canyons and caves. Within the distance mentioned, there is but one horse trail leading from the

¹ See Nine Point Mesa Quadrangle, Brewster County, Texas, published by the United States Geological Survey, Washington, 1918.

draw to the top land. Wagons and automobiles must detour to reach the top.

The northern wall of the canyon at its mouth and at the rock shelter rises from 400 to 450 feet above the valley. The talus at its base extends up the wall about one third of this distance, and the outer edge of the sloping roof of the rock shelter is about midway between the upper edge of the talus and the top of the cliff. The northern wall juts from 200 to 300 feet beyond the southern one. This was advantageous to its inhabitants, as it allowed one standing at the eastern end of the rock shelter a wonderful view for miles to the east and southeast down the draw, and permitted any breeze coming up the draw in summer to enter the rock shelter, while in winter when the winds come down the draw, it prevented quite effectually their deflection into the canyon, a circumstance taken advantage of to-day by herders, who use the old shelter for a winter fold.

The rock shelter is well protected from rain, for the drainage above is toward the southwest and the water falls into the canyon at its western end, so that very little comes over the cliff. Occasionally, however, a small portion of the rainwater flowing over the edge of the opposite canyon wall is carried into the shelter by strong winds.

At the end of the canyon is an abundant water supply, stored in a natural stone reservoir, about thirty feet in diameter, formed by the fall of over



ROCK SHELTER AND TALUS AT MOUTH OF BEE CAVE CANYON



CHALK DRAW FROM EASTERN END OF ROCK SHELTER

one hundred feet of the waters of Upper Rotten Draw, which drains the southern slope of Black Peak and a large area of the upland. This reservoir has never been known to go dry, according to the present older inhabitants of the surrounding country.

ROCK SHELTER

The rock shelter, measured by the overhang, is 768 feet long, and 106 to 110 feet wide in its central portion from overhang to back wall. A mass of rocks which has fallen from its roof near the center almost divides it into two portions.

It was occupied mostly at the easterly end, this part being better adapted to the purpose, as it was the widest and most level. Much filling and leveling had been done during the time of occupancy. Over a small area to the east the floor-covering was found to be on the undisturbed talus, while the further the work was carried to the west the deeper was the fill of ash, stone, grass and discarded material, especially against the rock shelter wall. Many pointed ends of large stones protruded through the lower layers of the flooring, but at the time of the abandonment almost all of these were covered by succeeding layers of similar floors, which were over four feet deep at some points. On the wall at the back were a number of pictographs in red oxide of iron, one of which probably represents a bird with wings spread, and two others human beings.

HOUSE-SITES

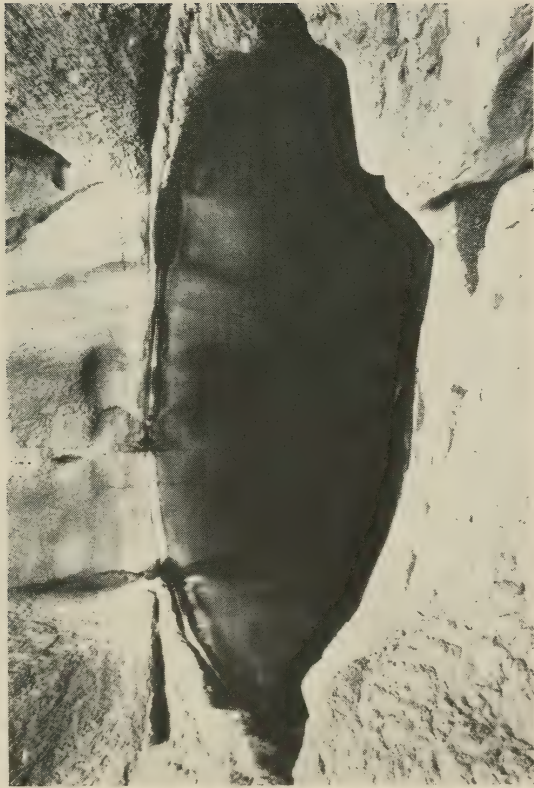
These sites have been called house-sites for want of a better name. The walls, judging by the amount of loose stone in close proximity, were probably not much higher than when found. No roof beams or posts were found except in house-site 4, where charred ends of posts were driven into the floor, but there is no evidence that these supported a roof. Perhaps enclosures would have been a better term.

The ruins of six "houses" were found, the foundations of which were all laid on the lower floor levels. These, for convenience of reference, will be denoted by number, in the order of excavation.

The walls of house 1 were partly demolished, and the site completely covered by the later floor layers. The east wall was 15 inches thick and measured 11 feet in inside length; it was 21 inches high at its southern end, and 17 inches at its northern end where it abutted on the rock shelter wall, and it bowed 6 inches in the center, toward the east. The northern end of the wall was 4 feet 3 inches long, and was constructed of small stones quite well laid, and chinked with a mixture of adobe and ash. The southern end was made of heavier stones with the inside corner thickly plastered with the same material, and the center part, 3 feet 5 inches long, was poorly constructed, one stone 12 inches wide by 2½ inches thick having been placed on end.

Six feet of the southern wall of this house were traceable, it being 17 inches thick at its western end.

COFFIN—ROCK SHELTER



NATURAL STONE RESERVOIR AT END OF BEE CAVE CANYON

COFFIN—ROCK SHELTER

PL. IV



HOUSE-SITE 3, LOOKING EAST

The second course of stone was laid in adobe, with the base heavily plastered, and showed the fingerprints of the builder. The western wall was missing. Near the eastern wall and outside the house-site were two small stakes driven into the ground, not far from the rock shelter wall.

Little remained of house-site 2, except a part of its eastern wall which curved at its southern end and was 2 feet high. The foundation stones were all quite large and were set on end. For a distance of 9 feet this wall was parallel with the west wall of house 3, forming a wall 2 feet thick.

Near this wall, but inside of the site and six inches below the surface, was uncovered a sherd of a cooking pot. In a row, about six inches apart and at the same distance from the house wall and on the same level, were three fragments of unbaked pottery figurines and a fragment of coiled basketry.

House-site 3 was immediately east of that of house 2. The west wall of this house was built against the east wall of house 2, as before mentioned. Both the east and the west walls were of large stones set on edge; the southern one of smaller stones, laid up. All the walls stood 2 feet high. The floor plan was irregular. Its northern side along the rock shelter wall was 11 feet 8 inches long. The average dimensions of the house were 6 feet 6 inches, by 9 feet 8 inches. No definitely defined floor was found, but the level of a bed of ashes found six inches below the surface and in the center of the room probably

had been one that caught fire and burned downward until it reached the stone fill beneath (pl. iv).

Outside of the burned area, in the first foot below the surface and mixed with grass, were fragments of matting, skin, skin twisted on strings, wood showing marks of tools, arrow foreshafts, a hearth for fire-making, a quantity of chews or quids and fragments of crowns of sotol (*Dasyllirion* sp.), cactus leaves (*Opuntia*), pieces of gourd, corn-cobs and husks, cactus seed-pods, piñon nuts, animal bones, stone chips, a broken stone arrowpoint, a small grinding-stone, a pitted hammerstone, and a small stone painted with a black design.

In the second foot level, which exposed the bottom of the west wall, the fragmentary material was similar to that of the first with the addition of two worn sandals and two fragments of the carapace of a turtle. In the northwest corner, 14 inches below the surface, was a bundle of loose grass which covered a fragment of a blanket-like object made of fine fiber and strings. The fragment was folded and laid upon a checker-weave mat, which in turn was placed upon a piece of leather of about the same size. The grass floor-coverings, which were laid before this house was built, ended a few inches below the west wall.

Below the house just described and between the rock shelter wall and a large rock, were three fragments of an object that may possibly have been a baby-carrier, made of grass, tie-twined together with yucca leaves. One of the fragments was charred by the fire before mentioned.

Just east of these fragments and along the rock shelter wall was a bed of grass, 5 feet by 5 feet 4 inches in size. Below the grass was a framework of buckeye branches tied together at different points with strands of fiber. A bent piece of cedar laid on this framework, with the concave side toward the wall, caused a ridge under the grass and may have acted as a partition to divide off the space next to the wall, to be used as a bed for a very small child (pl. v).

Under the second cross-bar, formed by a branch, toward the eastern end, was a small mass of soft grass which, upon being removed, disclosed a digging stick lying parallel to and under the cross-bar, and a net bag.

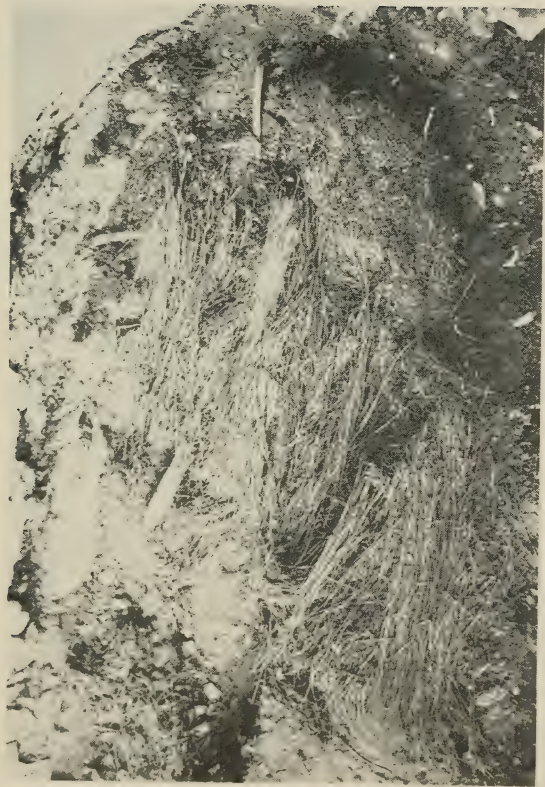
Eight inches below the bed just described was another one made of grass on a framework of branches. In removing the grass, which was well worn, a small child's sandal was found. The bed was in a depression and rested on the undisturbed talus (which at this point was of very fine stones), except in the center where there was a hole 15 inches in diameter and 5 inches deep which had been filled in with stone and ash. It was of the same length as the upper bed but narrower by about one foot. Scattered between the branches under the lower bed were quantities of small seeds, nuts, animal bones, sotol and cactus leaves, a burned fragment of antler, an arrow-point, pieces of matting, and a worn sandal. The two beds and the baby-carrier were quite separate from the débris of house-site 3 above them.

On the wall of the rock shelter, about midway between the remains of the east and west walls of house 3, were five impressions made by hands smeared with red oxide of iron, four of which, placed in pairs, one above the other, faced directly into the room. The thumbs of the upper pair were placed opposite each other, while the thumbs of the lower pair faced outward. The lower left impression was $6\frac{3}{4}$ inches long and was 3 feet above the surface of the room before excavating began. The fifth impression was that of a left hand placed on a fractured surface facing southwest and a few inches to the west of the four above described. The imprint of the fingers was elongated, as though the person had drawn his hand down with the fingers touching the wall for a short distance before pressing the palm upon it. The bottom of this imprint was about in line with the top of the highest of the other four. About six inches below the imprint last described there was a smear on the wall, as though the hand had been wiped on it after making the impression.

There were traces of smoke blackening on the wall at the eastern end of the house.

House-site 4 was east of that of 3, and the space between the walls of the two houses was filled with stone, making a wall varying from 3 feet 6 inches to 4 feet in thickness. The floor plan was oval in shape, with one end truncated.

The east and west walls were built of both large stones on end, and small stones laid up, while the



UPPER BED AT ONE-FOOT LEVEL BENEATH HOUSE-SITE 3



HOUSE-SITE 4, LOOKING EAST, WITH WESTERN AND PART OF SOUTHERN
WALLS REMOVED

southern section was composed of large stones on end. The bases of the east and west walls were 32 inches below the surface, and the base of the southern portion was slightly higher. Two fragments of crude metates were incorporated in the walls, one in the east (pl. vi) and one in the west. The east wall was smoke blackened.

While cleaning out the house to the level of the low spot next to the rock shelter wall, an almost complete sifting basket was uncovered, set on edge against the west wall. Six inches below this level was a remnant of a grass floor, the center of which was covered with ash and small burned stones. Between the eastern edge of this area and the east wall of the house, and on the floor, was about a bushel of pieces of leaves which had been stripped from the outside of roasted crowns of sotol, and in the northwest corner was about half this amount of the same material.

Scattered through the débris encircling the room were numerous bones of animals and birds (many of which were burned and split), an arrow foreshaft, two paint-sticks, six reed pipes, a fragment of a shell pendant, an arrowpoint, fragments of matting and leather, wood showing marks of tools, a hearth for fire-making, gourds, seed-pods, seeds, stone flakes, pieces of antler, a grinding-stone, and the sotol leaves already mentioned. Finding such a quantity of roasted sotol fragments and animal bones surrounding the burned area in the center of the room sug-

gests that the house, after falling into disuse as a habitation, was employed as a pit for cooking.

The east and west walls extended about two inches below this floor. Slightly below the floor were the charred ends of three posts which stood in a row about one foot east of the center of the room. Their lower ends had been hacked and broken off, as though a stone tool had been used, and they had been driven into the stones of the talus below.

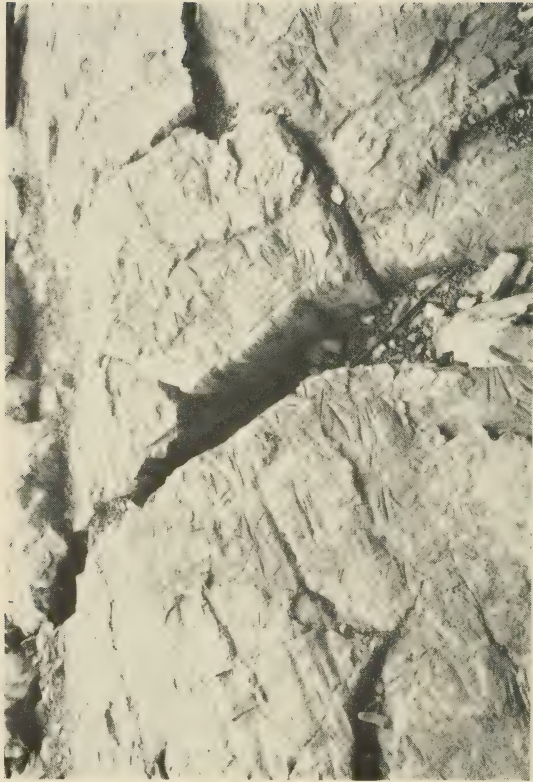
The grass floor-coverings extended under and down 9 inches below the walls of house 4, and the fill of rock and débris another 15 inches. The grass was badly burned, and with it everything that it might have contained.

Between the rocks of the fill below were several fragments of sandals and checker-weave matting, a short piece of fiber string with two seed and three reed beads threaded on it, three arrowpoints, animal and bird bones, several grinding-stones and pitted hammerstones, a fragment of a wooden fire-tongs, a painted stone, a notched rhythm stick, a fragment of an unbaked pottery figurine, a quantity of small seeds, several Mexican walnuts, a stick of wood charred at one end and having two strips of leather attached with sinew to the other.

On the wall of the rock shelter, about midway between the east and west walls of house 4, was limned an outline of a left hand and wrist. Inside the outline, which was dark red, the surface was clean with the exception of a trace of lighter red on



OUTLINE OF HAND AND WRIST, HOUSE-SITE 4
Length of hand, 8.5 inches



GROOVED ROCK SURFACE, POSSIBLY ABRADED FOR SHAPING AND
SHARPENING IMPLEMENTS

the two center fingers and across the knuckles. Outside there were smudges of smoke blackening on the left side of the wrist and between the thumb, first, second and third fingers. The left outline of the third finger was missing and the tips of thumb and fingers were not completed. The total length of this outline was $13\frac{1}{2}$ inches (pl. VII).

To the south, adjacent to the combined east and west wall of house-sites 3 and 4, and on the surface, was a fireplace or pit 26 inches in diameter by 7 inches deep, which was filled with ash. It was well defined, having no doubt been cleaned out many times. The grass floorings around and below the pit were charred, but remained firm.

House-site 5 was excavated by Mr. M. R. Harrington in 1928. Its inside northwest corner was 7 feet 9 inches from the inside northeast corner of house-site 4. The west wall stood on a grass floor-covering 15 inches thick, in which a pendant of steatite was found. Between this flooring and the stone fill, 12 to 15 inches below and under the western part of the house, three wooden plugs and a piece of coiled basketry were recovered. The removal of a large stone from the center of the south wall exposed a pouch made from a small checker-weave mat, containing a quantity of corn and squash seeds.

When house 6 was built, three large stones which lay on the surface were incorporated with other stones on edge to form the wall. The floor, which was immediately below the surface, was of well worn

grass. A fireplace, in the shape of a rounded pit, was midway of the room, not far from the southern wall. It was filled with ashes to the depth of $7\frac{1}{2}$ inches, and the grass adjoining was charred. The layers of the grass floor-coverings under the house were 9 inches thick and lay on the talus. There was no rock or other fill below.

Between the grass floor-coverings and next to the large stone at the eastern side of the house were found the left half of the lower jaw and part of the frontal bone of a human skeleton, two fragments of metates colored red on one side and black on the other, and a rubbing stone. Near by was a fragment of a sandal and a short length of reed inserted into what appears to be a piece of dried vegetable substance.

Along the rock shelter wall, to the west of the house-sites above described, were three groups of stones which were flat on the surface. Their position suggests that at one time they formed low walls which have been knocked down by the sheep and goats that today occupy the rock shelter during the winter months. While it was impossible to measure these enclosures accurately, they are in such a position as to indicate rooms about 8 by 9 feet in size. If assembled, the stones would have made a wall two tiers, or about 9 inches high.

Remnants of seven similar structures were located along the wall in the western part of the rock shelter. They were built of loose stones on the talus and the

floors covered with grass mixed with which strings and fibers were found. There were also eight spots along this section of wall which had been lightly covered with grass and had probably been used for camping. One of these, in a depression, was covered a little more thickly than the others, and was littered with twigs, leaves, animal bones, fiber strings and corn-cobs.

CAVES

The mass of stones previously mentioned, which had fallen from the middle of the arch of the rock shelter roof, formed several small caves, two of which showed signs of human habitation. The larger, cave 1, was 37 feet 9 inches in extreme length, and about 9 feet wide. The smaller was approximately 9 feet square. Cave 1 had been occupied at its northeastern end. Back of a retaining wall four to five inches high, formed of three stones placed end to end between a large rock and the southerly wall, was a bed of grass, leaves, twigs and litter. In front of the retaining wall was a patch of grass flooring one to two inches thick. A fireplace 18 inches deep was close to the edge of the flooring and 6 inches from the northerly wall. It was filled with ashes and the wall was smoke blackened.

Behind a stone, against the southerly wall and at the edge of the grass flooring, were a pair of worn fiber sandals, and scattered through the grass of the bed were a corn-cob, fragments of checker-weave

matting, coiled-weave basketry, reeds, pieces of wood bearing marks of tools, fiber, strings, gourds, a hearth for fire-making, a notched end of an arrowshaft, a bowed twig, and a fragment of a curved grooved stick, 8 inches long, such as is used for rabbit hunting by some of the living tribes of the southwestern United States today. Upon removal of the retaining wall before mentioned, the grass flooring was found to run under the wall and bed.

On the northerly face of a large rock at 9-G, 10-G, and on the upper face and edge of a large split rock, 18-J, 19-J (see map), were numerous grooves which may have been used to help shape and sharpen bone and other implements (pl. VIII).

FIRE-PITS

To the east of the rock pile at the center of the shelter were two depressions, the larger without, and the smaller within the area covered with grass. Both these depressions proved to have been fire-pits. The greater one was bare, but the smaller was surrounded with pieces of roasted sotol crowns and other refuse.

OBJECTS RECOVERED FROM THE EXCAVATIONS

STONE ARTIFACTS

Many grinding-stones, few of which are over 6 inches in length, a size convenient to operate with

one hand, were found. The coarser and harder ones are neatly pecked to shape, but some of the finer grained and softer are ordinary brook stones. The worn surfaces are of interest as they show the motion used while grinding. Some are worn flat by steady pressure, some are convex from rocking, and others, especially the softer, finer grained type, are worn to a sharp edge on one side. A few are pitted on one or both sides, showing a secondary use as hammers.

Beside the two crude metates used in construction of house 4, and one found under the surface, only a few fragments of others were recovered.

Pitted hammerstones were abundant, and about a dozen roughly chipped spherical stones, which probably were used as hammerstones, were also found.

Many chipped or flaked stone implements occurred, such as arrowpoints, scrapers, saws, knives and spear-points. The largest of the scrapers is $5\frac{1}{2}$ inches long.

A fragment of a grooved axe or maul, and a fragment of what appears to have been a bowl made from a nodule with the rim rounded by grinding and the outside pecked were found in the fill under the floor-covering, near the wall about in the center of the shelter.

Other finds within the shelter were:

Several fragments of flat, fire-blackened stones, which may have been used as griddles or baking stones.

Two rough stones with fiber cords attached.

Two fragments of tubular smoking pipes, or "cloud blowers," made of limestone.

Four small unworked stones wrapped with grass. The ends of the wrapping on one of these are twisted together, while the ends of the grass on two of the others are held in place by cactus spines. Protruding from under the wrappings are what appear to be thin pieces of some vegetable substance. It is possible that these objects were used as charms (fig. 1).

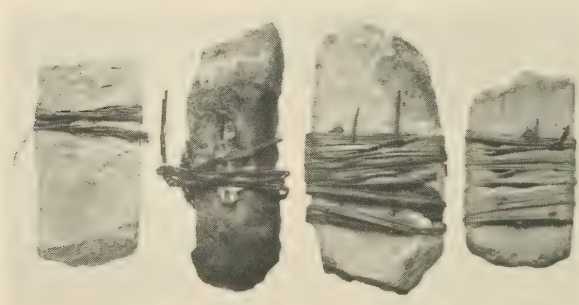
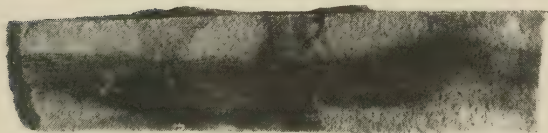
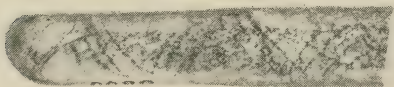
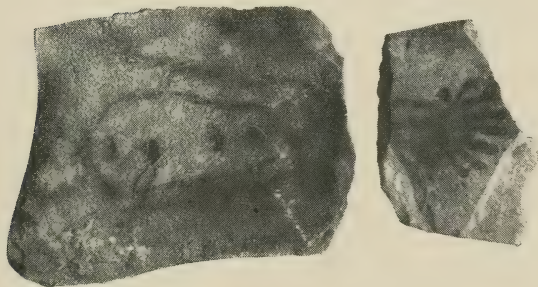
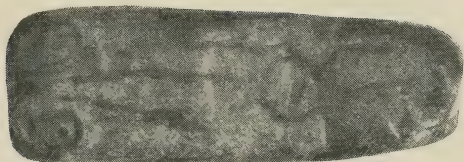


FIG. 1.—Stones wrapped with grass. Maximum length, 2.6 in.
(16/8706-08)

A number of brook stones and flakes from the shelter wall were decorated with painted designs, two with red, the others with black. The designs, for the most part, although quite clearly defined, are not suggestive of interpretation (pl. IX).



STONES DECORATED WITH DESIGNS IN BLACK OR RED
Maximum length, 3.5 in. (16/8589, 8594, 8596, 8599, 8600)



STICKS OF WOOD WITH TENON-LIKE ENDS
Length of *b*, 7.4 in. (16/8619)

PAINTS

Black, red, and yellow paints were employed by the dwellers in the rock shelter. On some of the painted stones charcoal appears to have been the basis of black paint, on others vegetable juices were the chief ingredient. Oxide of iron was used for red, and ochre for yellow. The beveled ends of thin pieces of stone served to apply the colors, and a number of these were found with the paint adhering to them.

WOODEN IMPLEMENTS

A number of round sticks cut at each end, possibly gaming sticks, and two short triangular ones which may have been dice were found.

Among objects of unknown use are five lengths of wood, round, and with one end cut like a tenon. The opposite ends of two are tool marked (pl. x, *c*, *d*). The one marked *e* is splintered, and the remaining two are charred.

A similar object, $9\frac{1}{8}$ inches long and $\frac{9}{16}$ of an inch in diameter, was found back of a cave at the mouth of Rotten Draw, about two and three quarters of a mile south by east of the shelter. This specimen had a tenon at each end, one at an angle of about forty-five degrees in relation to the other.

An entire rhythm stick, $11\frac{1}{2}$ inches long, with twenty-nine notches, and several fragments of others, some of which are very crude, were recovered.

Many fragments of fire-making drills and hearths

remained. Only one of the drills was complete. It measured $25\frac{5}{8}$ inches in length, and had a rough point at the upper end, proving that it was of the type manipulated by twirling between the hands.

Small bows, about a foot in length, made from a branch or twig, and bent with a string of fiber, were the only bows recovered. These were probably toys, for although they are strong enough to rotate a fire-drill, it is doubtful if they were used as such, for no parts of the fire-drills found show evidence of having been used in that manner.

Four fragments of atlatls, or throwing-sticks, all from the end in which the nock of the arrow or spear rests, lay in the same levels as notched arrows. The upper sides of three of them are flat, while the upper surface of the fourth slopes slightly toward the center. The grooves are round. The under sides are all convex. Two of these specimens had been severed from the rest of the implement, probably after accidental damage to the prongs, by cutting or sawing part way through from either side and breaking the remaining fibers.

Three fragments of curved sticks (rabbit sticks), grooved along the sides, were recovered, but no entire specimen.

Tapered plugs, saw-grooved, and broken off at one end and battered at the other, may have been used as stoppers for gourd bottles. One of these has been cut off and made smaller at one end, the tool marks showing where this operation ceased. In both ends

of this specimen are what appear to be wedges (although these may be the projections of one piece running all the way through, as they are in line) of a material, in its present state, as soft as, and resembling, the edge of a piece of gourd.

A number of battered and hacked pieces of wood which may have been used as stakes to drive in the ground, or as wedges, were found.

Many broken and cut fragments are probably remains of tool handles and implements. One of these is probably the partly sawed and broken off handle of a rabbit stick, roughened to afford a grip.

A thin stick $4\frac{1}{8}$ inches long, flattened on two sides, is pointed and charred at one end. On the



FIG. 2.—Pointed stick with leather straps. Length of stick, 4.1 in. (16/8685)

other end are bound two pieces of leather which apparently originally formed loops, one on each flat side. One of the loops is broken, and part of the other is missing (fig. 2). The object suggests an implement held between two fingers passed through the loops, possibly a corn sheller.

An object $\frac{7}{16}$ of an inch in diameter and 3 inches long is wrapped on one end with sinew. A hole $\frac{5}{16}$ of an inch in diameter and 1 inch deep is drilled in one end. The other end is cut off, and judging by the surface this object was used after the cutting took place, as it is more or less smoothed and rounded. Other similar sticks ranging up to 8 inches in length were also found, with drillings in one or both ends, though some do not show usage on the cut end.

Other sticks have depressions in the upper ends from $\frac{3}{32}$ to $\frac{3}{16}$ of an inch deep. The lower ends are partly cut, then broken off. These objects fit well when laid in the groove of the fragment of the throwing-stick before described, with the depressions engaged with the spur of it. They may have been ends of light projectiles.

Other wooden implements were:

Several pointed digging sticks, varying from 20 to $42\frac{3}{8}$ inches long, and ranging from $\frac{5}{8}$ to 1 inch in diameter.

A number of sides of wooden tongs used for trimming the fire, and for other purposes. These had been flattened on one side and grooved at one end, so that when a pair of them is bound together, the

flat surfaces face to face, a very efficient tool for handling embers is obtained. They had all been used, as shown by the charring of the unbound ends.

Two finely finished wooden implements, pointed at one end and grooved at the other, probably used as paint-sticks.

Two twigs bound at both ends with fiber strings, probably parts of snares.

A flat piece of wood $\frac{5}{8}$ of an inch wide by $2\frac{1}{2}$ inches long, decorated with three black painted designs, one of which appears to represent a dragon-fly, another possibly a butterfly, while the last is a rectangular oblong outline.

Notched foreshafts of wood, for projectiles used with throwing-sticks.

Some complete, and many fragments of wooden foreshafts for arrows. A few of these were pointed at one end and notched at the other, for the purpose of mounting points therein. The majority of these foreshafts, however, were pointed at each end. One of the latter type was found inserted in and attached to a fragment of reed arrowshaft. Two fragments of notched foreshafts were found with fragments of arrowpoints in place, held there by sinew wrapping.

REEDS

Of this material there were:

Fragments of the tapered head ends of arrowshafts.

A cut and tapered piece of reed inserted into another section of reed cut for the purpose.

Fragments of the nock end of reed arrowshafts with wrappings and shreds of feathers in place; two specimens showing that they had been cut from the shaft. All of the nock ends when wrapped had been reinforced by driving pieces of reed or wood into them.

Small reeds which had had feathers attached to one end, parts of the bindings and feathers being still in place.

A short piece of reed inserted into what appears to be a dried vegetable substance.

Pipes were found made from two sections of the stem of a reed. One end is cut off close to, and the other at a distance from the joint; the dividing partition between the sections is punctured. The short ends served as mouth-pieces while the longer ends served as bowls, these being in many cases badly charred and shortened through use. A few of the bowls still contained the dottle, one of which was of cedar sprays.

Tubular containers were made of reed; three of these were found between two clumps of grass, under the edge of a large stone, near the bottom of the trench and below the grass floor-covering. They were filled with what appear to be seeds of *Amaranthus paniculatus*,² and were stoppered with grass plugs. The tubes were cut similar to the reed pipes, but were longer, and the partitions between the sections were not punctured.

² Identified by the Bureau of Plant Industry, Washington, D. C.

ANTLER PESTLES AND TOOLS

The following specimens were found:

Several pieces of antler, cut and rubbed smooth at the ends, that may have been used as pestles.

The basal segment of an antler, hollowed out $\frac{9}{16}$ of an inch in diameter and $\frac{5}{8}$ of an inch deep, on one end, the inside of which is charred.

A fragment of an antler implement, possibly a flaking tool.

An implement, the inner surface of which is concave, and the ends of which are beveled. It was probably used as a skin scraper.

Pieces of split antler, the cut surface and edges finished smooth as by rubbing.

BONE IMPLEMENTS

Bone implements, awl, chisel and gouge shaped, were quite plentiful, and well polished from use. They do not differ in type from those found so abundantly in Arizona and New Mexico. Two fragments of bone have as designs scorings of parallel straight lines. One bone fragment is decorated by a series of black paint dots running lengthwise, and another shows traces of having been smeared with red paint and striped with black.

Three implements made of scapulae, probably those of deer, were broken away so as to retain the spine and one fossa. The edges of the implements are worn quite smooth and thin at the point, and

one has what appears to be some vegetable substance adhering to it. For use as scoops these implements are sturdy and fit well in the hand.

GOURD VESSELS

Fragments of gourd vessels, many of which have been mended by placing a caulking of soft fiber over the crack before lacing together with fiber strings, were recovered. A few fragments appear to have been perforated with a friction drill, and one has many indentations, apparently made with a hot, pointed instrument.

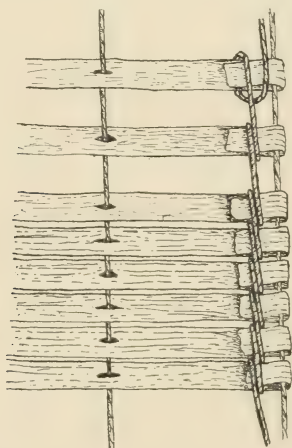
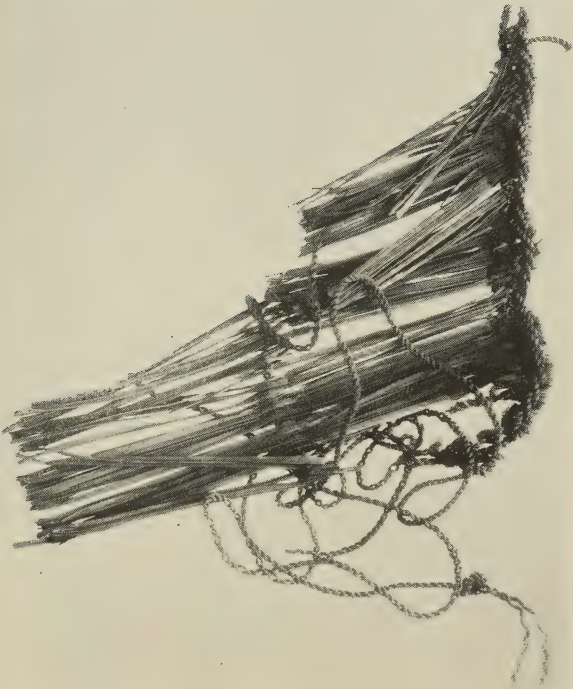


FIG. 3.—Detail of wrap-woven edge and warp strand of mat shown in
pl. XI



FRAGMENT OF GRASS MAT
Length, 6.3 in. (16/8688)

MATTING

Many fragments of matting of yucca leaves were found, both of the checker type, and of the over-two under-two twilled-weave technique, also three small mats, two of which are of checker-weave, and one of twilled, and a small checker-weave object with several strands allowed to extend out from one side.

There were also fragments of a mat made of unidentified grass, the edge wrap-woven with a two-strand twisted fiber string. Three inches from the edge the matting was held together by piercing and stringing the grass leaves on a two-strand twisted fiber cord (pl. XI and fig. 3). Fragments of a similar mat were found under the remains of a child in cave 3, around the corner and a little to the north of the shelter.

BASKETRY

A pouch about four and one-half inches square, made by folding a small checker-weave mat in the middle and stitching the ends and one edge together, was found buried a few inches below the surface and next to the outer side of a stone, forming part of the south wall of house 5. It was filled with about an equal quantity of corn and squash seeds. Part of the matting at the opening of the pouch had been broken away. It was closed by stuffing in a small quantity of soft grass and stitching with a narrow yucca leaf; a fiber cord was tied both ways around the pouch (fig. 4).

A cylindrical checker-weave basket four inches high, containing a piece of hematite, five small pieces of sinew, and a quantity of fine fiber, may be part



FIG. 4.—Pouch containing corn and squash seeds. Length, 5 in.
(16/8690)

of a fire-making outfit. They were found while scraping off the floor of the shelter preparatory to

excavation. The only fire-making tools found below the surface were drills and hearths.

Two sifting-baskets of the tray type were made of yucca leaves, with the strands separated $\frac{1}{16}$ to $\frac{1}{8}$ of an inch. Attached to each of these is a fragment of a rim or binding, made of several yucca leaves one laid on another and bound to the edge of the basket with an open-coil stitch. Many fragments of basketry with similar binding were found.

Of several fragments of coiled basketry, all in a very poor state of preservation, three are open-coiled, and nine split-coiled. The foundation of most is splints; one of the open-coiled fragments has a foundation of the small stems of some plant. A fragment of a base of another specimen was repaired by stitching with yucca fiber.

A piece of coiled basketry, about two inches in diameter, had both the foundation and the coils of yucca leaves. Two narrow leaves on edge form the foundation and split leaves form simple interlocking coils.

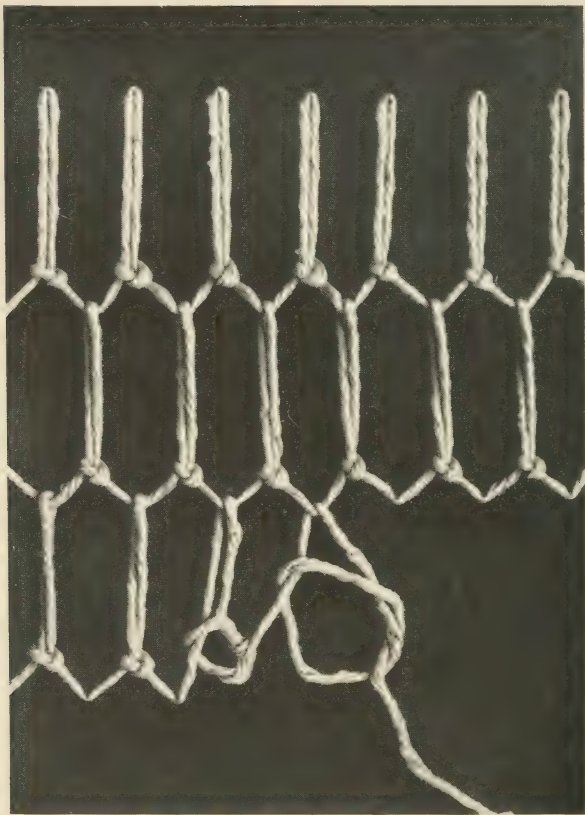
Many small fragments showed a weaving technique similar to the sandals found in the shelter, to be described later (pp. 43-49).

NETTING

Two fragments of netting were made of fiber strings, tied with a netting knot, the meshes approximately $1\frac{3}{4}$ and $2\frac{1}{2}$ inches respectively.



NETWORK BAG
Length, 12 in. (16/8719)



DETAIL OF NETTING TECHNIQUE OF NETWORK FRAGMENT

A network bag 12 inches long, of fiber string, has a mesh averaging $\frac{3}{4}$ of an inch. A draw string runs through the upper or last mesh; a twisted cord 9 inches long with a knot at its end is attached to the center of the bottom (pl. XII).

The meshes of two other fragments of netted bags measure $\frac{5}{8}$ and $2\frac{1}{2}$ inches approximately.

Other fragments of netting were made of split yucca leaves. The intersections are not tied, and they are attached to sticks of wood. The net apparently was made on a frame, the sticks forming part of it, and the strands of yucca were stretched across, first in one direction and then in the other. Where a strand crossed another it was wrapped one turn around the one already in place.

A fragment of network, in bad condition, made of split yucca leaves, shows an irregular sized mesh consisting of a series of loops, tied with slip knots, interlaced with other like series. Plate XIII depicts a cotton string netted to illustrate this technique.

Open-coiled work without foundation, made of fiber strings, was exemplified in a number of fragments. One specimen, when held in its proper position, forms what may have been a cap. Near the edge there are ten coils and six loops to the square inch and near the center seven coils and five loops. Another fragment is of interest because of the extra twist used in making coils.

STRING

Examination of the large number of pieces of string show that a variety of fibrous vegetable material was used in making them. The majority appear to be made of the fibers of the leaves of different species of yucca which grow in the neighborhood.

Many pieces of string of a softer fiber were colored red and yellow; a few are made of grass and some of a material as soft as cotton.

Many times, split yucca leaves and untwisted fiber strands were used as binders or tie strings. Most of the string found was twisted, varying from $\frac{1}{32}$ to $\frac{3}{8}$ of an inch in diameter, and of one, two, three, four, and five twisted strands. A few four-strand strings were made by twisting together two two-strand strings.

Sometimes in making string of a leaf, the point was left intact, thus keeping the end from fraying, and forming a lacer-like tip. A few fragments of sandals have tie-strings of this type attached to them.

Fringe-like fragments made of one- and two-strand cords of twisted fiber, the units of the fringe hanging down, were probably formed by tightly twisting and looping sections of the main cord. One fragment has two complete units $15\frac{1}{2}$ inches long.

Many pieces of twisted cord have tapering ends. In one case two such pieces are tied together with a square knot, forming a cord almost eight feet long, with the tapered ends free. A twisted fiber cord,

complete in itself, one end tapered and the other end formed in a loop, was found in a small coil. Several tie-twined bits of fiber string were also collected.

KNOTS

The square or reef-knot was generally used. Out of over one hundred knots examined, only three were granny, and two square bow-knots. Half-hitches and slip-knots were also used, the former probably in tying to an object, the latter in snaring.



FIG. 5.—Sandals of yucca, braided, with ends woven in. Maximum length, 6.5 in. (16/8814, 8817)

SANDALS

A great many sandals made of yucca were found, but unfortunately, almost all of them are badly worn and have but few tie-strings still attached.

The sandals may be said to have been braided in two ways: First, several strands braided together; second, one or more strands braided with two opposed elements. The plaiting of the former is irregular, the ends of the strands are woven back through the braid and it is impossible to trace the whole braid without destroying the specimens (fig. 5). Thickness and strength were added to the larger sandals

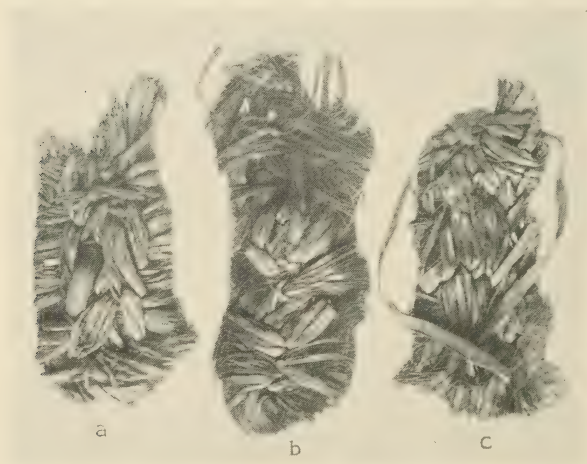


FIG. 6.—Sandals of yucca, reinforced. Maximum length, 8.5 in.
(16/8812, 8817)

of this type by weaving in extra strands after the braiding had been completed. The two specimens, *b* and *c*, fig. 6, are braided, the latter having been

reinforced with strands woven in lengthwise, while the former appears to have been reinforced at the ends with an overcast stitch that pierces the center, and coils around the sides of the sandal. The coils have been worn off on the under side.

The braiding with two opposed elements varies but little (figs. 7-9). In fig. 7 the strand is kept flat

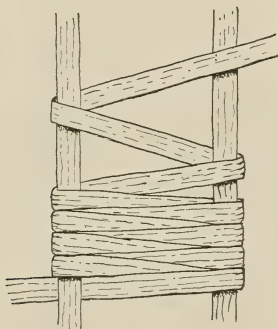


FIG. 7.—Detail of braiding technique with opposed elements, strands kept flat.

while braiding. In fig. 8 the technique is the same as in fig. 7, except that the strand is turned over each time it is passed between the opposed elements. Figure 9 and fig. 7 show the same technique except that in the latter two strands are braided instead of one.

When necessary, new strands were added to carry on the work. Loose ends were allowed to project

from the under side of the sandal. For opposed elements, broad leaves, narrow leaves, shredded fiber, and two-strand twisted fiber strings were used.

The sandal *c*, fig. 10, is made of broad leaves and is constructed in reverse of the technique of fig. 9. *B* of the same plate is made of narrow leaves and is constructed according to the technique of fig. 9, with



FIG. 8.—Detail of braiding technique with opposed elements, strands turned.

extra strands woven in lengthwise. *A*, fig. 10, is made according to the technique of fig. 8, one large leaf forming the two opposing elements.

The three sandals depicted in fig. 11 are woven in the technique of fig. 7. The opposing elements of *a* are of yucca which has been shredded, except at the ends which are tied together at the top. This sandal appears to have been made from the bottom

up, and the shredded yucca strand used to form the opposed elements was wrapped several times spirally around a small bundle of fiber at the start, to help keep the elements apart. The sandal *b* is made of short narrow leaves, three or four of them being used for each opposing element; a single narrow leaf is

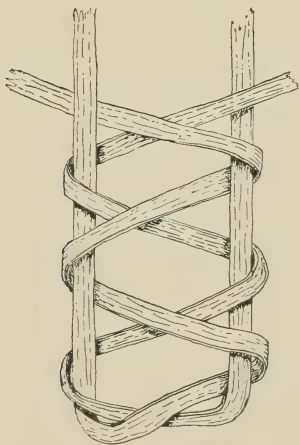


FIG. 9.—Detail of braiding technique with opposed elements, two flat strands.

braided for about five rows from the bottom, after which two or more leaves are woven in at a time.

TIE-STRINGS

Judging by the tie-strings found attached to other sandals and fragments of sandals, the tie-strings of

the sandals shown in figs. 5, 6 and 10 were of yucca leaf or fiber, and were attached as shown in fig. 12.

Six sandals similar to the one illustrated in *b*, fig. 11, were found. All of them are small, ranging from 4 to $5\frac{1}{2}$ inches in length, and were probably worn by children. They appear to have been held to the foot



FIG. 10.—Sandals of yucca, braided with two opposed elements. Maximum length, 7.8 in. (16/8812-13)

with a toe loop, and two side strings, which are attached to the edges of the sandal half to three quarters the distance from the toe end to the heel, passed over the instep, and then tied to the toe loop.

The opposing elements, or framework, and the tie-strings of the child's sandal (fig. 11, *c*) were two-strand twisted fiber cords. One long cord was used to form the framework and the front tie-strings, as shown in fig. 13.



FIG. 11.—Sandals of yucca, braided with two opposed elements, *a* with shredded strands and *c* with fiber string. Maximum length, 7 in. (16/8813-14)

A fragment of what may have been a sandal is of checker-weave, with two strings attached to it, and shows wear on one side.

FABRICS

A fragment of woven material of blanket-like appearance, about 14 by 15 inches, is made of coarse twisted strands of fine fiber, held together at intervals by twined similar strands, and small tightly twisted two-strand fiber strings (pl. XIV).

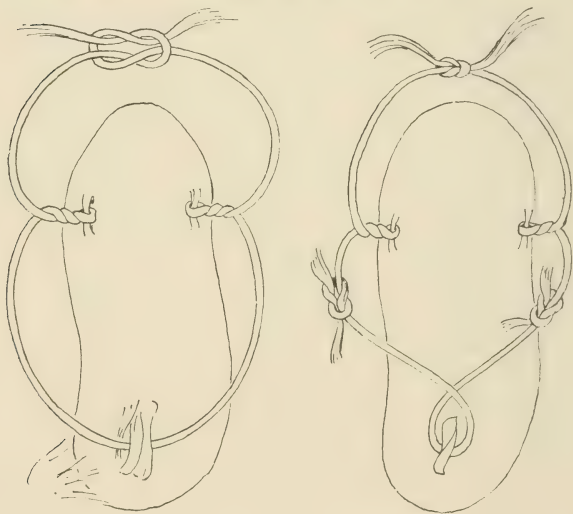


FIG. 12.—Technique of tie-strings of sandals.

Another specimen is a small corner piece of fabric in which the warp strands, or two-strand twisted strings about $\frac{1}{8}$ of an inch in diameter, are twined tightly together at $1\frac{1}{2}$ inch intervals by smaller strings. The edges are turned, and the twining is

similar to that of the previous specimen described, and in both specimens the technique resembles that used in making rabbit-skin blankets.

Many twisted strips of skin such as are used for making skin blankets were also found. Most of them are wrapped spirally around fiber cords; a few have bits of fur or hair still in place.

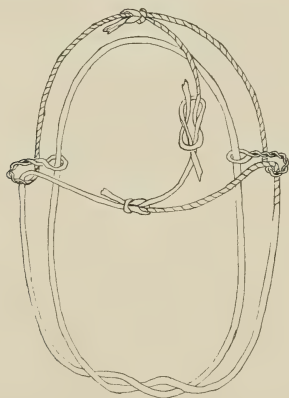


FIG. 13.—Technique of framework and tie-strings of child's sandal *c*,
fig. 11.

Of materials prepared for use in weaving there were:

Quite a number of small bundles of shredded fiber; leaves of sotol (*Dasyllirion* sp.), yucca and other plants, sorted or split to a size; grass, etc. Most of the bundles are loosely wrapped near the center with a tie-string of the same material as that in the bundle.



BLANKET-LIKE FABRIC OF SOFT FIBER
(16/8729)

FIBER BRUSHES

A brush was made by folding a number of strands of fiber so that the ends met, and then wrapping them around with other strands of fiber.

An object made of fiber strands folded over a loosely twisted fiber string and tie-twined below the string was in a roll when found and had the appearance of being a brush.

CACTUS THORNS

Several cactus thorns were bound together with a fiber string.

BINDINGS

Numerous rings, from less than two inches to over six inches in diameter, made of yucca leaves and other fibrous plants, were discovered. They probably were used as bindings in transporting grass and other material to the shelter. They were made either by wrapping a single leaf, or leaves tied together, end to end, with a square knot; or by running fiber strands around the bundle of material several times and then repeatedly passing the loose ends under and around the loop thus formed. Several rings made of narrow leaves have the appearance of having been twisted together before binding, but the ends finish in a wrap and not in the knot which would be necessary if the strands had been twisted

before binding. All these rings are quite flat, probably made so by being trampled upon after having been discarded on the shelter floor.

Many plain bindings and wrappings were found, and they were almost invariably tied with one or more square knots.

GRASSES AND LEAVES OTHERWISE EMPLOYED

Grasses were put to other uses than those already mentioned. Among articles of this material found were:

Rings of grass wrapped with yucca leaves, or other fibrous vegetable substances.

Fragments of pads of matted grass with parts of tie-strings attached.

Fragments of an object made by tie-twining together strands of grass with strips of yucca leaves. The grass stems used in making the strands do not exceed 9 inches in length, so the strands were made continuous by overlapping small bundles of stems as the work proceeded. Some of the strands are loosely wrapped with narrow strips of yucca leaves. The widest fragment has seven strands and is $5\frac{3}{4}$ inches wide. Judging by the fragments found, the bottom of the object was a crude network of yucca strips tied to the lower ends of the tie-twined strips. The rim was finished, after the final tie-twining knot of the upper coil, by tying the ends of the tie-twining strips in pairs with a square knot. The work probably was carried on from left to right as all the loose

ends of the knots to the left are free, while the ends to the right are caught under the following knot. The tie-twining is separated by intervals ranging from $1\frac{1}{2}$ to 4 inches. The fragile construction of this object must have made it unfit for heavy duty, and the finding of the fragments just west of the beds under house 3 suggests that they may have been pieces of a cradle or baby-carrier which was discarded when the lower bed was abandoned and the upper bed made.³

Fragments of an object made of sotol leaves twined together to form a bag-like container, the bottom part of which is missing. A large fragment of a similar object, with a worn sandal tied across the opening, was found in a cave at the mouth of Lower Rotten Draw.

Fragments of a hammock-like specimen made of sotol leaves twined together at intervals with split leaves found in a fill 4 feet 2 inches below the surface. This object, when found, was 35 inches long by 18 inches wide near the center, and was broken in two by a worked stone which had been thrown in on top of it. One of the ends, a ball of knotted leaves, was broken off and lay a couple of inches away. Scattered over the object were some light twigs and leaves, and toward one end was a handful of grass held together with a leaf.

³ Kidder and Guernsey in *Archeological Explorations in Northeastern Arizona*, *Bulletin* 65, Bureau of American Ethnology, Washington, 1919, illustrate, pl. 72, cedar-bark cradles the sides of which are twined together.

LEATHER REMNANTS

Many fragments of different sorts of leather besides the strips previously mentioned (p. 30) were found. The majority seem to be scraps, with the



FIG. 14.—Pendants of stone and shell. Length of mussel shell, 1.6 in. (16/8682, 8683, 8696)

holes made in stretching still at the edge, and cuttings left after making garments or other articles. Some of the pieces have been scored with series of lines which form irregular squares. Four fragments appear to have been parts of objects made for some definite use, but there is not enough left fully to determine what purpose they might have served.

ORNAMENTS

Few objects of personal adornment were found. These were:

Two flat pendants of stone, one of which has had two perforations broken out, but in place of which a third one had been drilled. A fragment of a pendant made of the shell of a fresh-water mussel. A pendant made of a land-snail shell, with a piece of a fiber cord attached for suspension (figs. 14-15).

Two short strands of beads made from seeds, and a short strand of beads of cut sections of reed, threaded on fiber strings (fig. 16).



FIG. 15.—Pendant of stone. Length, 1.2 in. (16/8684)

CLAY FIGURINES

Two complete and twenty-four fragments of small grotesque human figures made of untempered and unfired clay seem to have been the only fictile objects possessed by the ancient inhabitants. The figures

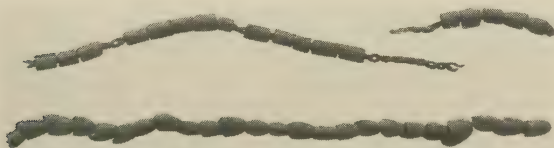


FIG. 16.—Seeds and sections of reed strung like beads. Maximum length, 4.6 in. (16/8704)

consist of the head and torso; the noses are long and sharp; the mouths are small round punctations; the

eyes are part of the black paint decoration which covers the upper parts of the figures. One fragment has sharp pointed breasts, evidently representing a female. Another has traces of red, yellow and black painted decoration. The lower parts of the torsos



FIG. 17.—Figurines of unfired clay. Maximum height, 2.9 in.
(16/8675, 8678, 17/8705)

are round. The backs are incurved and some have the natural indented line down the buttocks. One figure, with head missing, was wrapped around its center with grass (fig. 17). These figurines are probably of the same class as others more or less like them still found among many of the present day tribes, and are a symbolism of fertility.

VEGETABLE FOODS

Among the vegetable substances, most of which could be used for food, were:

Quantities of prickly pear (*Opuntia* sp.) and other small seeds, corn, mesquite beans (*Prosopis glandulosa*), acorns (*Quercus*), Mexican walnuts (*Juglans*), Mexican buckeye or soap-berries (*Sapinus*), piñon nuts (*Pinus edulis*), desert-willow pods (*Chilopsis linearis*), pumpkin seeds (*Cucurbita pepo*), small gourds (*Cucurbita foetidissima*), squash seeds, seeds and pods of yucca, roots, some of which were no doubt used as amoles are today, and strings of dried cactus fruit of which some were tie-twined together. Cacti of different species, many devil's heads (*Hololacephala texensis*) were split in two horizontally to get at the inside. Great care must have been taken to rid them of the upper spiniferous halves, as none were found. Small cacti (*Echinocercus* sp.) were dried as were star cacti (*Astrocarpus fissuratus*). The latter is said to be used by Mexicans in the same manner as the peyote button. *Opuntia* leaves were all of a large size; one leaf was cut and filled with ash in such a manner as to resemble a quarter-cut of pie, $2\frac{1}{4}$ inches thick and $4\frac{1}{2}$ inches long on the straight sides. A sharpened piece of wood had been thrust through the center.

Large quantities of corn-cobs were found, and fragments of sotol crowns (*Dasyilirion* sp.). Innumerable quids or "cuds" of fiber, which are no

doubt remnants of the latter discarded after chewing, were scattered through the débris.

ANIMAL BONES

While quite a variety of animal and bird bones were found, they were not numerous, considering the size of the shelter and the quantity of vegetable refuse it contained. Whether this points to dry seasons and poor hunting during part of the summer is a question. Most of the bones were broken in order to obtain the marrow. Among the bones that it was possible to identify are those of deer, rabbit, badger, coyote and rat; while the fragments of a large jaw and a tibia are probably those of a bison. Fragments of the carapace of a turtle were also found.

CONCLUSIONS

The rock shelter in Bee Cave Canyon seems to have been occupied at different intervals and for no long time at any period; for the artificial deposits, which varied from almost nothing at the edge, to about four feet at the rear of the shelter, were separated from one another by layers of grass only a couple of inches apart, as if the occupants had successively inhabited and abandoned the site many times, leveling and improving the floor with grass each time they or others returned to reoccupy it. In excavating the successive floorings, each layer of deposits was removed, and within them were found

many artifacts and other objects; but there was no indication of any cultural difference in the layers, regardless of their depth.

Although many fragments of notched arrowshafts were found, there was no trace of a bow. The occurrence of the atlatl and the notched arrow, in deposits indicating no great range of time, would seem to suggest that the throwing-stick and the bow had been used contemporaneously.

A notable feature is the scarcity of pottery, the only trace of it being some unbaked figurines, and three small fragments of vessels, one of which (part of a bowl) is of thin brown ware with black painted decoration. These potsherds were found on or near the surface, and are doubtless intrusive.

The only small fireplaces found in the area covered by grass were the one south of the combined east and west wall of house-sites 3 and 4, and the one in house-site 6. These were undoubtedly made by sheep-herders who use the shelter in the cold months as a fold. The litter of cardboard boxes, pieces of leather and other rubbish on the surface south of house-site 6, and the finding of a small tin box containing beans, and burned wood from boxes, on the surface in the house-site, confirm this opinion.

Leaving these two fireplaces out of consideration, the only fireplaces left are the two large pits east of the rock pile at the center of the shelter, and house-site 4, which had been used as a fire-pit after falling into disuse as a dwelling.

Bearing in mind what has been said as to the floor-coverings and fire-pits, the evidence points to the supposition that the rock shelter was occupied only as a summer camp. The inflammable material used as floor-coverings prevented building fires for warmth in the houses in the winter time. Cooking or roasting in large pits suggests a communal mode of living. Probably only one pit at a time was used. The larger one outside of the covered area, judging by the fact that it was bare of refuse, appears to have been in use prior to the one within (see p. 22).

The finding of such large quantities of pieces of sotol crowns and of corn-cobs suggests that corn was raised in the valley, and that sotol was the main food supply while waiting for the corn to ripen.

Other circumstances pointing to the theory that the camp was used only in the summer time are that, while numbers of hammerstones and manos were transported into the shelter, but few metates, which are heavy, were found. Also, the finding of so many pieces of leather, all of which, with the exception of four, appear to be discarded cuttings, suggests that the people left the lowlands in the spring, traveling light, and that such skins as were secured during the summer were made up into garments or other objects and taken away with them in the fall.

No whole gourd vessels were found, and most of the fragments had been carefully mended—facts which might indicate either that the gourds also were brought in by the seasonal immigrants, or at least that gourds were scarce.

The only human remains discovered in the shelter in 1929, besides the piece of a frontal and the left half of a lower jaw-bone found in house-site 6, were: three more left halves of lower jaw-bones found eight inches below the surface in a triangle within two feet of one another and about midway and seven feet south of 9 I and 10 I (see map); a few charred fragments of what appear to have been a tibia in cave 2; and a tibia and a fragment of a skull in the rear of cave 1.

It would be interesting to know if there is any significance to be attached to the fact that four left halves of lower jaws were found.

It would be impossible to say how many people occupied the shelter at one time, but if the houses both in the east and the west halves of the shelter and the camp sites along the wall were all inhabited contemporaneously, sixty souls could easily have been accommodated.

The heavy grass floor-covering ended somewhere behind the large rock pile, but a grass walk was laid from there, between the loose stones on the surface, to a point beyond, leading past some of the westerly houses, in the direction of others and of the water supply; and this is naturally the first step in building up the floor of the western part of the shelter in a manner similar to that of the east.

APPENDIX

In a short account of his work done in Bee Cave Canyon rock shelter in 1928, Mr. M. R. Harrington refers to a burial he uncovered.⁴ As this was the only one encountered during the work done in this shelter, and as some of the accompaniments are different from those found during the later exploration, a quotation from the above mentioned report is pertinent. Mr. Harrington writes:

Beginning another trench between the pile of fallen stones and the cliff, and continuing it eastward along the rear of the shelter, we found almost immediately the remains of a flexed skeleton, minus the skull, with which appeared a bowl-shape coiled basket, part of a twined openwork cigar-shape basket, fragments of a bag made of fiber cord, many small beads made of cane, and part of a necklace made of sections of the legs of some large iridescent green beetle neatly strung on a fine fiber cord. Among the vertebrae was a wicked-looking flint spear-head, and near the pelvis lay a deposit consisting of three red paint-stones and two flint knives.

Notes on the Ethnobotany of Bee Cave Canyon, by Henry T. Fletcher, *Bulletin* 33, no. 3, West Texas Historical and Scientific Society, Sul Ross State Teachers College, Alpine, Texas, 1930, is also of interest, Mr. Fletcher having devoted much time to research and study in that region.

⁴ Indian Notes, vol. v, no. 3, Museum of the American Indian, Heye Foundation, New York, July, 1928.

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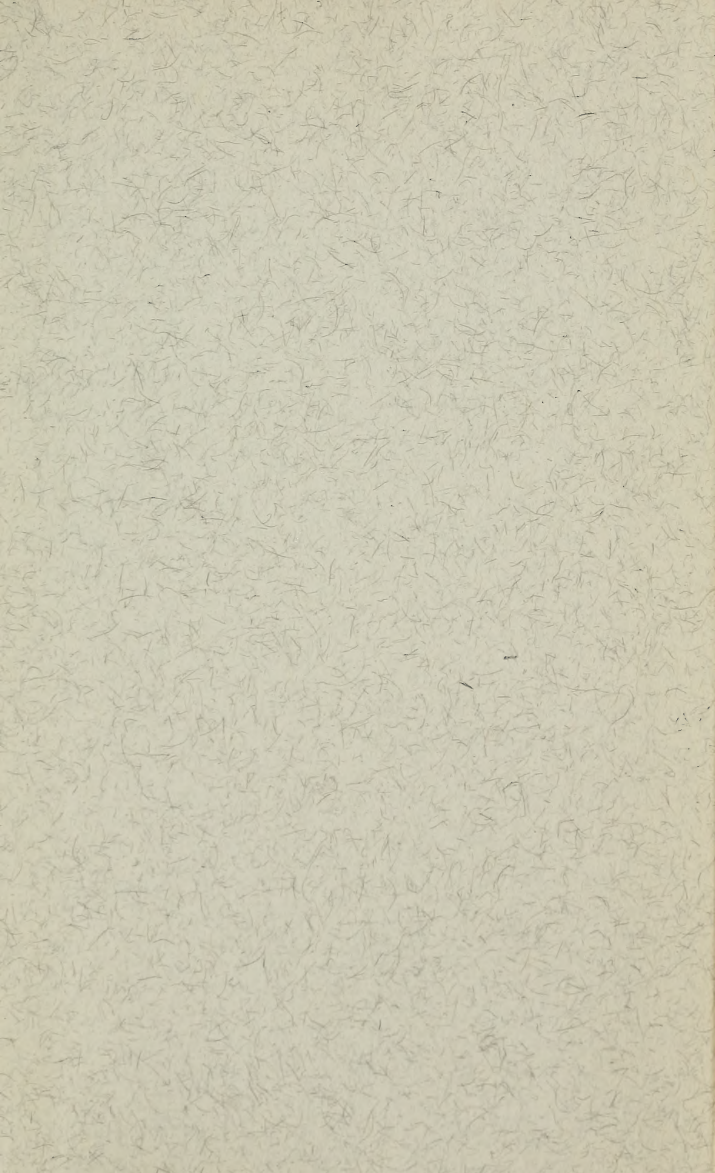
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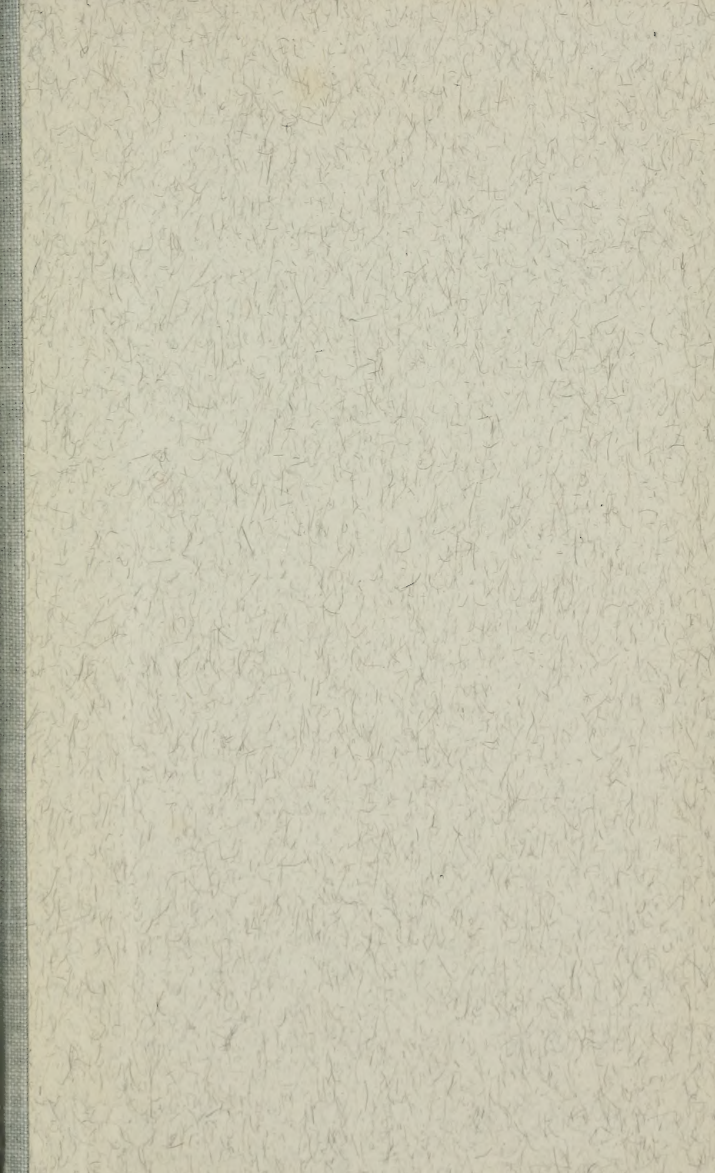
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